

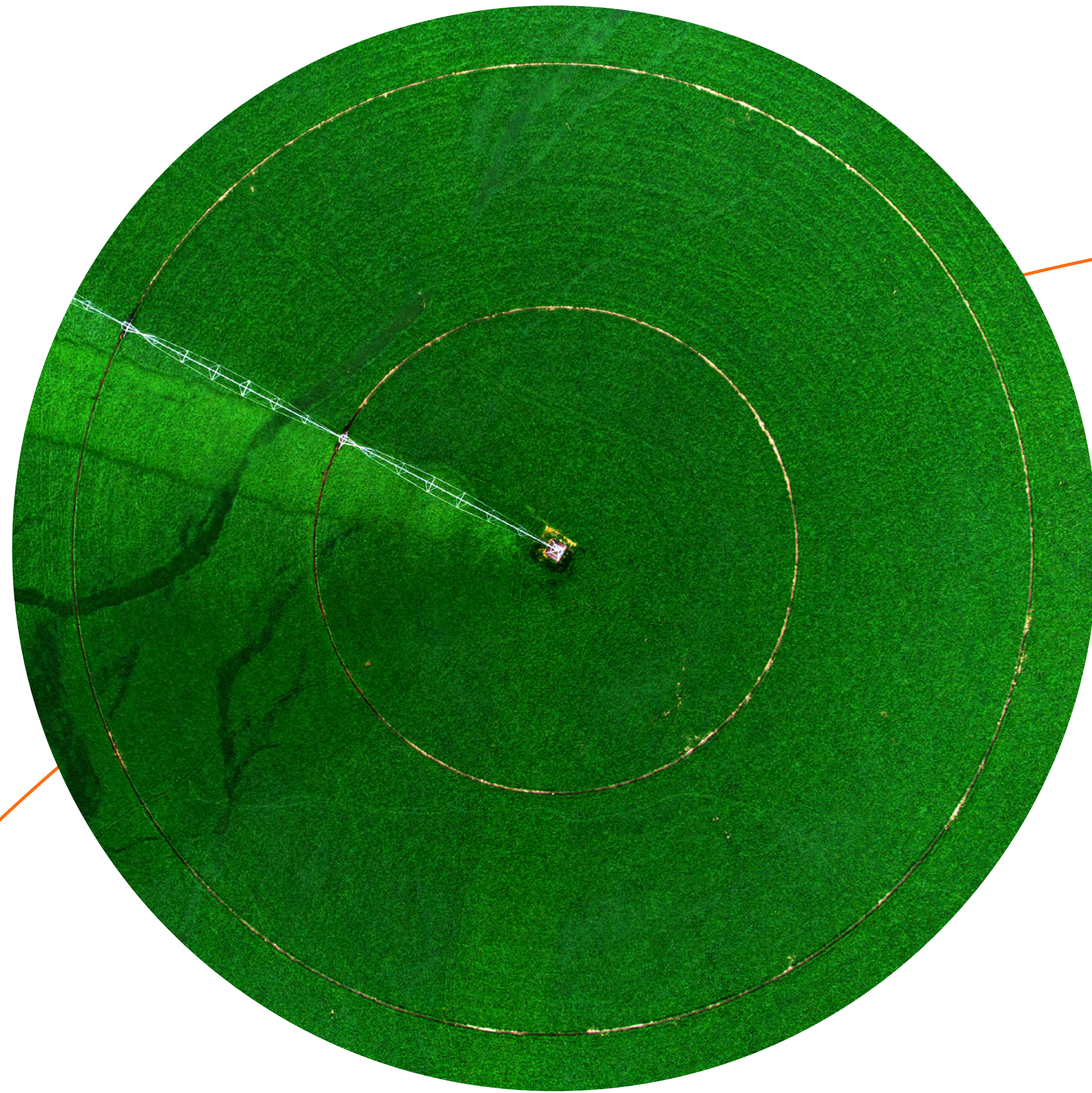
Globalstar ™

EBOOK

# AgTech Without Borders

The Role of Satellite in Global Farm Innovation





Agriculture is foundational to the entire globe, from sustaining communities, the economy, and ecosystems worldwide. From food to materials and fuels, agriculture touches nearly every aspect of daily life. It's also a sector that faces immense pressure: to feed a growing population, to adapt to climate change, and to do more with less.

As the world grows more complex and resource-constrained, supporting agriculture isn't just a local or regional concern; it's a shared global responsibility.

# The Growing Strain on Agriculture

Across EMEA and APAC, agriculture is facing a convergence of pressures that are testing the limits of traditional farming models. Water scarcity, soil degradation, climate volatility, rising input costs, and shifting labor dynamics are creating an urgent need for more resilient, efficient, and responsive agricultural systems. In sub-Saharan Africa and South Asia, unpredictable rainfall patterns are shrinking planting windows and increasing the risk of crop failure. In Australia and the Middle East, persistent droughts and extreme heat are prompting producers to reassess their irrigation and land use strategies. These challenges are no longer cyclical; they are structural in nature.

At the same time, consumer demands are changing. Populations in both emerging and mature markets are growing more conscious of sustainability, food safety, and supply chain transparency. This intensifies the pressure on agricultural producers to deliver not only more, but also better, faster, safer, and with clearer provenance. In regions like Southeast Asia, where smallholder farmers are the dominant group, bridging this gap requires scalable solutions that don't require extensive technical infrastructure.

Globally, agriculture is undergoing a digital transformation, with EMEA and APAC serving as critical frontlines in this shift. The adoption of smart farming technologies – ranging from connected sensors and autonomous equipment to remote monitoring and AI-driven analytics – is enabling agricultural leaders to gain new visibility into their operations, optimize input usage, and improve outcomes in real-time. But the success of these digital solutions depends on one critical factor: connectivity.

In many of the world's most important agricultural regions, traditional cellular networks don't extend far enough – or perform reliably enough – to meet the needs of modern farming. That's where satellite connectivity comes in. With coverage that spans even the most remote fields, satellite technology is emerging as the digital backbone of next-generation agriculture. It enables real-time data collection, automated decision-making, and resource-efficient farming, regardless of location.





## The Role of Satellite IoT in Modern Agriculture

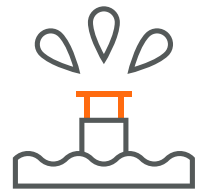
Agriculture today is more than just planting and harvesting: it's a data-driven, precision-focused operation that demands visibility and control over vast, remote, and often disconnected landscapes. This is where satellite-powered IoT becomes a game-changer. By enabling continuous monitoring and data exchange in even the most infrastructure-poor regions, satellite IoT helps agricultural operations scale smarter, conserve resources, and react quickly to shifting conditions. From remote deserts to high-altitude pastures, these technologies are transforming how growers and producers manage land, labor, and logistics.

**Below are five critical use cases where satellite IoT is making a measurable difference.**



## Remote Asset Tracking

Across expansive farmland and dispersed operations, tracking equipment, machinery, and field assets present both logistical and financial challenges. Satellite-connected trackers provide real-time location and usage data, eliminating the need for cellular coverage, which helps producers prevent theft, reduce idle time, and manage their fleets more efficiently, regardless of the remote deployment location.



## Smart Irrigation and Water Management

Water scarcity is one of the most pressing issues facing agriculture, particularly in the EMEA and APAC regions. Satellite-enabled IoT sensors monitor soil moisture, flow rates, and pump performance to optimize irrigation scheduling. These insights help conserve water, cut energy usage, and improve crop yield without the need for in-field technicians or cellular connectivity.



## Livestock Tracking

From free-roaming herds in the Mongolian steppes to large-scale cattle operations in Australia, satellite-based livestock tracking provides continuous location and activity data on animals in transit or pasture. This improves herd management, minimizes losses, enhances traceability, and supports animal welfare even in vast or rugged terrain where cellular coverage is nonexistent.



## Environmental Monitoring

Understanding climate impact at the micro level is essential for sustainable agriculture. Satellite-connected environmental sensors measure air quality, temperature, humidity, and other critical variables. These data points support early warning systems for crop disease, optimize planting cycles, and improve farm-wide decision-making, especially in areas too remote for terrestrial connectivity.



## Supply Chain and Logistics Optimization

Satellite IoT ensures end-to-end visibility of perishable goods and agricultural products in transit. Whether tracking grain shipments across borders or monitoring temperature-controlled containers of produce, satellite connectivity ensures reliable, real-time updates from anywhere on the globe, helping mitigate risk, reduce spoilage, and build resilient supply chains.

# Why Satellite Connectivity is the Necessary Infrastructure for AgTech

For vast stretches of farmland, ranchland, and remote infrastructure in EMEA and APAC, conventional cellular networks don't go far enough. In these regions, where coverage gaps are the norm and not the exception, satellite connectivity provides the resilience and reach needed to unlock AgTech's full potential.

Unlike cellular networks, which rely on densely distributed terrestrial towers, satellite networks operate with global overhead coverage. This distinction becomes especially important in agriculture, where operations frequently span thousands of hectares in remote areas far from population centers. Whether it's a smart irrigation controller in the Australian outback, a livestock monitoring tag in the hills of central Kenya, or a grain silo sensor in rural Turkey, the ability to maintain a constant data link regardless of terrain or infrastructure is mission-critical. Satellite connectivity ensures these links are always available, without requiring the buildout of new terrestrial infrastructure or waiting for cellular providers to expand their footprint.

Cellular can be highly effective in urban and semi-urban areas, but when it comes to coverage across broad, rural geographies, the reliability gaps become obvious. Dropped signals, network congestion, or power outages, especially during adverse weather events, can lead to blind spots in monitoring and breakdowns in real-time decision-making. In contrast, satellite-enabled devices operate independently of local infrastructure, with significantly higher uptime. This independence makes satellites especially well-suited for regions experiencing rapid climate shifts, natural disasters, or infrastructure instability.



One of the key advantages of satellite in AgTech lies in its consistency. For use cases such as water-level monitoring, fertilizer tank sensors, or livestock geolocation, timing is everything. An alert that fails to arrive, or arrives too late, can lead to costly consequences. Satellite-connected IoT devices, especially those using low-power two-way communication, allow for continuous status updates, threshold-based alerts, and even remote command execution, all with minimal energy consumption. This level of reliability enables agricultural operators to act proactively instead of reactively, preserving resources, increasing yield, and protecting assets.

Additionally, satellite is technology-agnostic in a way that cellular is not. While cellular operators may require device certification, SIM provisioning, or region-specific band support, satellite devices connect to a dedicated space-based infrastructure with uniform standards. This makes it easier to deploy and scale solutions across national borders, an essential advantage for multinational operations or export-heavy agricultural economies. In EMEA and APAC, where farms may span borders or suppliers are located across continents, a single satellite provider can support the connectivity needs of the entire ecosystem.

Ultimately, satellite connectivity is not a competitor to cellular; it's a complement where cellular falls short. For AgTech in EMEA and APAC, it's not about replacing one with the other, but rather selecting the right tool for the job. In regions where consistent connectivity can make the difference between surplus and shortage, satellite offers the stability and scale needed to meet agricultural demands both now and into the future.



## Satellite vs Cellular in AgTech Connectivity

FEATURE	SATELLITE	CELLULAR
Coverage	+ Global	- Regional
Infrastructure Dependency	+ Minimal	- Entirely
Deployment Scalable	+ Easily scalable across wide geographies and borders	- Scalability constrained by network availability and tower density
Resilience During Disasters	+ Remains operational during power outages and natural disasters	- Vulnerable to local disruptions and infrastructure damage
Real-Time Monitoring	+ Consistent and low-latency communication in off-grid areas	- Inconsistent in rural zones, may suffer from signal zone
Security	+ Lower risk of local interference or tampering	- Greater exposure to interference, congestion, or outages
Device Power Requirements	+ Optimized for low-power, long-life IoT devices	- Can require more power-hungry devices
Cross-Border Use	+ Seamless deployment across multiple countries	- May require different SIMs, certifications, or roaming agreements
Use Cases Fit	+ Ideal for remote asset tracking, smart irrigation, livestock, etc.	- Best suited for semi-urban to urban AgTech applications



## SATELLITE IOT IN ACTION

# Global AgTech Case Studies

Around the world, agriculture is undergoing a digital transformation, and Globalstar's satellite solutions are playing a vital role in that shift. From livestock protection and water conservation to asset tracking and biosecurity, these real-world applications illustrate how Globalstar's satellite IoT offerings are solving complex challenges for agricultural stakeholders operating beyond the reach of cellular.

Below are select case studies that demonstrate the impact and versatility of our technology across continents and use cases.

### Protecting Livestock from Wildlife Threats & Loss

#### Spotter & Globalstar: Preventing Predation and Loss

In Mongolia, Kazakhstan, Kyrgyzstan and Tajikistan, a critical challenge facing free-roaming horse owners is livestock loss from predators and adverse weather. Spotter integrated Globalstar's satellite connectivity into its solutions to provide horse owners with real-time location alerts. The system relies on SmartOne C devices to transmit geofenced alerts so horse owners know exactly where their herds are. In very remote areas with little infrastructure or landmarks, Google Maps is not informative enough to provide the level of detail needed to locate their ranging horses. So, Spotter created an additional service enhancement which sends SMS messages with useful relational information. For farmers operating in remote, cellular-dark areas, this provides a vital security layer. The solution has reduced livestock losses and improved animal welfare.

## Combatting Cattle Theft in Rural Argentina

### Globalstar Satellite in Anti-Theft Surveillance

Cattle theft is a major issue in Latin America, costing ranchers millions annually. In response, one Argentine rancher outfitted his herds with SmartOne Solar trackers. These devices provided uninterrupted satellite updates on cattle location – critical in a region with virtually no cellular service. When some animals were stolen, authorities were able to retrieve them within hours using tracker data. The rancher now reports a strong deterrent effect from would-be thieves. Satellite-enabled anti-theft measures are becoming an essential part of modern livestock operations where traditional oversight is impossible.



## Staying Compliant with Beef Sustainability Standards and Monitoring for Zoonotic Diseases

### Using Globalstar to Ensure Traceability and Transparency

In a shifting regulatory landscape, beef producers are increasingly required to demonstrate compliance with environmental, animal welfare, and biosecurity standards. One large-scale Australian cattle operation turned to Globalstar's satellite-connected tags (via partner CERES TAG) to automate traceability across their livestock fleet. With SmartOne-enabled tracking and health monitoring, they met data requirements with minimal labor and provided export partners with verifiable welfare metrics. The result? A stronger position in global beef markets and easier navigation of regulatory complexity.

### New World Screwworm Early Detection in Mexico

As Mexico faces a potential outbreak of the New World Screwworm, a parasite that devastates livestock, Globalstar and CERES TAG are helping producers prepare. Using satellite-enabled ear tags, ranchers can monitor animal behavior in real-time to detect early signs of infection. During a recent deployment, multiple tags detected unusual movement patterns consistent with infection, enabling early veterinary intervention. In areas with little to no cellular infrastructure, these devices are providing frontline defense against disease, helping to avoid regional economic disruption and widespread animal suffering.

## Water Management for Remote Ranches

### SmartOne C Enables Tank Level Monitoring

Water is the lifeblood of livestock operations, but managing it is particularly difficult in arid or sprawling regions. One U.S. rancher turned to Globalstar and an IoT partner to install SmartOne C devices on water tanks and pumps, enabling remote level and flow monitoring. Rather than physically checking each tank across hundreds of acres, alerts were sent when water dipped below thresholds or pump malfunctions occurred. This saved countless hours of labor and helped prevent catastrophic shortages. The satellite link ensured uninterrupted visibility regardless of terrain or distance.

## Advanced Livestock Tracking on Large Ranches

### Best-of-Breed with Ceres Tag and Globalstar

A large-scale cattle station in Australia implemented Ceres Tag's livestock monitoring system powered by Globalstar's satellite connectivity. Each animal wore a solar-powered ear tag, which recorded GPS location, movement, and health indicators. With real-time alerts available via Globalstar's network, ranchers improved mustering efficiency, optimized grazing, and responded rapidly to injury or illness. This system helped the ranch recover animals faster, reduce vet costs, and meet increasingly stringent export requirements.





## Environmental Monitoring and Agroeconomic Data Collection

### SmartOne Solar Powers Weather Station Uptime

Globalstar's SmartOne Solar devices have proven critical in powering environmental sensors in remote agricultural zones. In one project, weather stations were deployed to gather agroeconomic data used by researchers and cooperatives to understand changing patterns in soil moisture, wind, and rainfall. These stations relied on solar-powered Globalstar IoT devices to transmit data back to centralized systems. Without satellite, such data collection would be impossible in off-grid environments. These insights help guide crop planning, water allocation, and drought response across entire regions.

## From Sheep in Norway to Elephants in Africa

### Globalstar Satellite for Animal Tracking Around the Globe

In some of the world's most rugged and inaccessible areas, Globalstar technology enables animal tracking for conservation and commercial purposes alike. Specialist AgTech value added re-seller, FindMy, integrated the Globalstar STX3 chipset into their animal tracking collar to track sheep in the highlands of Norway to monitoring elephant migration in sub-Saharan Africa. This kind of wide-area connectivity is indispensable for ecological research, livestock safety, and preserving balance between agricultural and environmental needs.

## WHAT TO LOOK FOR IN A SATELLITE PROVIDER

# Key Differentiators That Matter in AgTech

Choosing the right satellite connectivity partner is a critical decision for agricultural operations. Whether you're monitoring livestock, tracking weather-sensitive assets, or collecting environmental data across vast hectares, not all satellite solutions are created equal. To make a smart, future-ready investment, agricultural producers, researchers, and technology integrators must understand what really sets providers apart.

Below are the essential differentiators to evaluate when selecting a satellite provider for AgTech use cases.

## one

### Network Reliability and Uptime

The core purpose of satellite in agriculture is to offer dependable, continuous connectivity, especially where cellular is weak or unavailable. A strong provider should demonstrate consistent uptime with real-world field performance, not just theoretical specs. Consider not just how many satellites a provider has in orbit, but how effectively they maintain visibility with ground assets and avoid service blackouts in harsh conditions or during power disruptions.

#### ASK

Does the provider have a track record of maintaining connectivity during infrastructure failures or environmental challenges?



# two

## Latency and Coverage Area

AgTech systems often rely on real-time or near-real-time data for irrigation control, soil monitoring, or livestock movement. Lower latency enables quicker decisions and tighter feedback loops. Equally important is the provider's geographic coverage, especially in rural or underdeveloped regions where agriculture thrives. Some satellite constellations are designed for global or near-global coverage with consistent service footprints, while others offer patchier or regional service.

### ASK

Does the provider offer truly global or region-specific coverage? How low is their network latency?



# three

## Ease of Integration with Existing Infrastructure

Ag operations are not greenfield IT projects. Farmers and agribusinesses often use a mix of old and new tools, meaning satellite connectivity must integrate cleanly with existing hardware and software. Look for providers that offer both plug-and-play devices and developer-friendly modules. Compatibility with APIs, cloud platforms, and edge devices is essential for flexibility and future scaling.

### ASK

Does the provider support integration with your platform or ecosystem? Are their devices field-ready or developer-friendly?



# four

## Battery Life and Power Efficiency

In remote deployments – particularly for monitoring water levels, gates, or animal behavior – battery life is crucial. Swapping out or recharging devices is labor-intensive and often impractical. The best satellite providers build or support low-power solutions that last months or even years on a single charge or solar input. This is especially important in wide-area, low-touch environments.

### ASK

How long do the provider's solutions last in the field without human intervention?





# five

## Security and Data Integrity

From high-value livestock to land analytics, AgTech increasingly handles sensitive data. A reputable satellite provider will have security baked in: data encryption, secure transmission protocols, and protection from tampering. This becomes critical for agribusinesses that rely on traceability, audit logs, or compliance with regulatory requirements.

### ASK

What encryption standards and data protections are in place for transmissions?



# six

## Proven AgTech Deployments

Finally, seek out providers with a real-world track record in agriculture. Look for documented case studies, local partnerships, or long-standing presence in the regions where your operations take place. Providers who understand the seasonality, regulatory environment, and operational complexity of AgTech will be better equipped to support long-term success.

### ASK

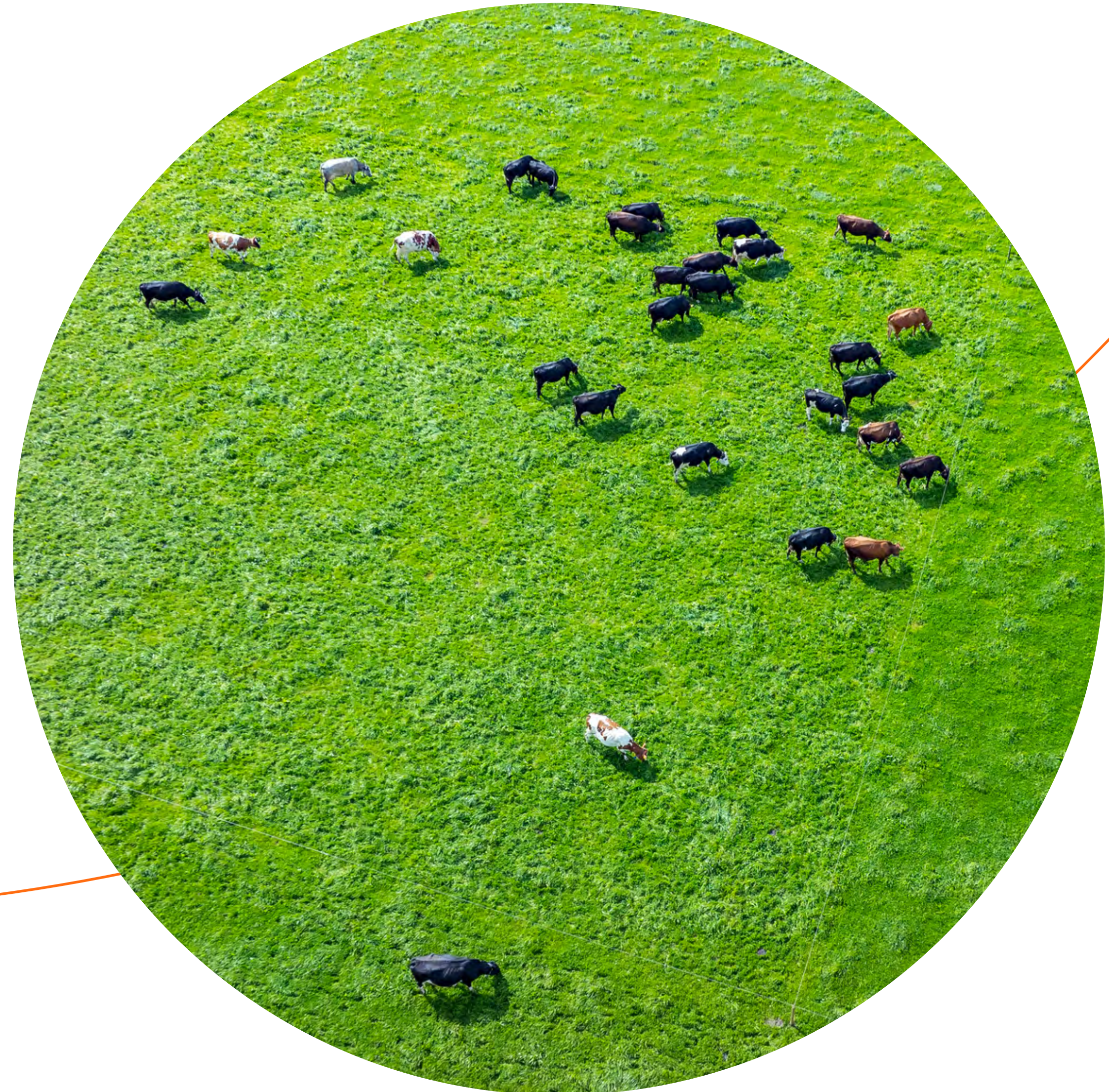
Has the provider supported successful agricultural deployments with measurable outcomes?





# Choosing the Right Partner for Agricultural Connectivity

Globalstar is a leading provider of reliable, low-latency satellite connectivity with decades of experience supporting mission-critical operations across agriculture, asset tracking, environmental monitoring, and beyond. With a robust LEO satellite network, licensed Band 53 spectrum, and an expanding portfolio of plug-and-play devices and embeddable modules, Globalstar delivers dependable solutions where terrestrial networks fall short. Our technology is trusted by AgTech innovators around the world – from water monitoring in Australia to livestock tracking in North America.





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Ready to grow with confidence?

Visit [www.globalstar.com](http://www.globalstar.com) to explore our solutions or speak with a Globalstar expert about how satellite connectivity can transform your agricultural operations.