

Precision Farming - Market Share Analysis, Industry Trends & Statistics, Growth Forecasts 2019 - 2029

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Report description:

The Precision Farming Market size is estimated at USD 13.11 billion in 2024, and is expected to reach USD 23.84 billion by 2029, growing at a CAGR of 12.70% during the forecast period (2024-2029).

Changing climate, growing demand for food, increasing the adoption of smart technologies in the global agriculture sector, and government initiatives to enhance farmers' efficiency through new technologies are some of the major factors driving the adoption of precision farming.

Key Highlights

- Precision farming is an agricultural management concept centered on noticing, measuring, and reacting to crop variability within and between fields. Plant production is focused on land parcels determined by property lines, the anticipated average crop yield of a particular field, and regional and ecological factors.
- By the end of 2030, precision farming is expected to become the most influential trend in agriculture, eclipsing other advancements. Remote sensing and ground communication outlets enable real-time information about equipment through the mobile app. Variable-rate technologies (VRTs) have allowed farmers to make more customized land management decisions, enabling more efficient use of inputs such as seeds, fertilizers, and pesticides under variable in-field conditions.
- Most broad-market vendors offer guidance systems, climate-weather predictions, and input applications equipment. Small vendors mainly target smart irrigation and field monitoring techniques specializing in IoT solutions. North America is the early adopter of technology and has a significant adoption rate of many innovative technologies used in precision farming. The region is a substantial adopter of IoT, big data, drones, and robotics in agriculture. However, the global trend is also reflected in the region, i.e., adoption curves of various technologies vary by region because of infrastructure and available service providers. For instance, within the United States, McFadden and Schimmelpfenning reported that precision agriculture companies are headquartered in at

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least 38 US states but are geographically concentrated. Many adoption trends also depend on the area's type and number of service providers.

-Moreover, growing investments in technologies such as driverless tractors, guidance systems, and GPS sensing systems are also anticipated to contribute to the precision agriculture market scope growth during the study period. For instance, in April 2022, Agtech firm EarthScout announced a unique addition to its scalable line of innovative agriculture products that assist farmers and food producers during a drought to save water and reduce irrigation and inputs by providing real-time data about soil moisture and growing constraints on their land. The innovative, unique EarthScout Soil Cub is an affordable, miniature 4.5"x3"x2" commercial-grade sensor that's installed in the field to monitor soil moisture, soil temperature, and EC at two soil depths so growers can see moisture and nutrient grades throughout the root site and adjust inputs.

-Further, in April 2022, Murata introduced a high-accuracy 3-in-1 soil sensor for data-driven sustainable agriculture. By monitoring the electrical conductivity, water content, and soil temperature, the sensor allows farmers to maximize the yield and quality of vegetables while minimizing resources such as fertilizers and water.

-Moreover, Increasing government initiatives that support the adoption of modern agriculture technologies and developed infrastructure have contributed to the high revenue of the regional market. For instance, the NIFA, a part of the U.S. Department of Agriculture, conducts sensor, geospatial, and precision technology programs to build awareness among farmers. In collaboration with Land-Grant universities, NIFA helps farmers generate robust sensors, associated software, and instrumentation for observing, modeling, and analyzing a broad range of complex biological materials and processes. Furthermore, in May 2022, the Government of Canada announced an investment of USD 4,41,917.5 to develop an integrated system for precision fruit tree farming. The investment also aimed to acquire sustainable solutions to tackle the uprising challenges in Canada's apple industry.

-The COVID-19 pandemic negatively impacted the global market for precision farming, resulting in the temporary closure of multiple industrial facilities in China, India, Europe, Japan, and the United States. As a result, the manufacturing of precision farming equipment significantly decreased. Government-enforced shutdowns following the coronavirus pandemic impacted the industry and slowed consumer demand for such expensive capital goods.

-However, more significant adoption could result from deploying remote sensing and farm management software technologies after COVID-19. Businesses have already started concentrating more on wireless platforms to support real-time decision-making for crop health monitoring, yield monitoring, irrigation scheduling, field mapping, and harvesting management. This may propel the studied market demand in the forecasted period.

Precision Farming Market Trends

Soil Monitoring is Expected to Hold Significant Share

- While some farmers have specific knowledge of detecting soil moisture and health, such knowledge is confined to only a few. Making farming decisions based on soil moisture and fitness has become even more difficult in the age of climate change. Soil sensors measure essential soil properties and relay them to a display device through reliable communication. Soil sensors are generally used in conjunction with variable rate applications or GPS to generate field maps, categorized according to the properties of the soil. Soil sensors are crucial to monitor the feasibility of the growth of the crops during the harvesting period.

- Sensors generate real-time information after the data analysis and cause the corresponding changes in the application rate. Conventional models of the utilization of a map-based approach are considered to be more productive. They allow space for problem analysis and adjusting the variable rate application in the following steps. The various type of sensors being integrated for soil monitoring purposes includes electromagnetic, optical, mechanical, acoustic, and electrochemical, as far as industrial research has reached.

- In addition, ground-based monitoring systems are anticipated to dominate the demand during the forecast period due to the increased use of various soil monitoring sensors among forward-thinking farmers worldwide. Ground-based monitoring has a sizable market share because it requires little technical knowledge. The demand for connected farming results from

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improvements in intelligent sensor technology and their integration with IoT modules.

- Additionally, a device called Soilsens, a low-cost smart soil monitoring system, has emerged as a potential aid to farmers struggling to make a farming decision. Proximal Soilsens Technologies Pvt created the Soilsens product line. Ltd, a startup supported by the Department of Science and Technology (DST) and the Ministry of Electronics and Information Technology and housed in the Indian Institute of Technology Bombay (IITB), Mumbai. A soil moisture sensor, a soil temperature sensor, an ambient humidity sensor, and an ambient temperature sensor are all built into the system. Farmers are given recommendations for the best irrigation practices based on these parameters through a smartphone app. The cloud also has access to this information. A portable soil moisture system is also available.

- In July 2022, the Conservation Innovation Grants (CIG) On-Farm Conservation Innovation Trials program was expected to receive a USD25 million investment this year, according to USDA. Through CIG, partners collaborate to improve agricultural practices while addressing concerns with our country's water quality, water quantity, air quality, soil health, and animal habitat. The CIG's On-Farm Trials component promotes the evaluation and broad adoption of cutting-edge conservation strategies in collaboration with farmers. This year's financing priorities are climate-smart agriculture practices, irrigation water management, fertilizer management, and soil health.

- Additionally, in February 2023, Murata, in collaboration with longstanding systems integration partner Sentinum, announced the GAIA soil monitoring solution, which, according to the company, could have a crucial role to play in smart agriculture. These soil sensors help maximize crop yields while decreasing fertilizer use and minimizing the amount of water needed for irrigation.

- Furthermore, technological advancement in farming may further propel the studied market growth. According to ETNO, the number of IoT active connections in agriculture was expected to increase in the European Union through the years. It was recorded at 46.92 million connections in 2022 and is expected to reach 70.26 million by 2025. Some uses for IoT devices in agriculture would be drone usage for surveillance or distributing seeds.

Asia-Pacific to Experience Significant Market Growth

- The region is anticipated to witness significant growth over the forecasted period in the studied market, primarily due to government initiatives in developing countries to encourage the implementation of modern precision farming technologies, thereby maximizing productivity. In 2022, the Government of India planned to launch Kisan Drones for crop assessment, digitization of land records, and spraying insecticides and nutrients. According to IBEF, India's agricultural and processed food products exports stood at USD 9,598 million in FY23 (April-July 2022), up by 30% year on year.

- According to IBEF, the processed food market in India is expected to grow to INR 3,451,352.5 crore (USD 470 billion) by 2025, from INR 1,931,288.7 crore (USD 263 billion) recently on the back of government initiatives such as planned infrastructure worth USD 1 trillion and Pradhan Mantri Kisan Sampada Yojana.

- According to the UN's Food and Agriculture Organization (FAO), more than 80% of the food consumed in sub-Saharan Africa and Asia is grown by smallholder farmers. Growing global demand from food processors and consumers for accountability for the entire product lifecycle is developing new access opportunities for smallholder farmers. Precision application of crop protection solutions is changing the agriculture sector in Asia. According to the German-based company Jebagro GmbH, its Myanmar subsidiary applies almost half of its pesticide products with UAVs.

- Service providers in many Asian countries are leapfrogging to advance application methods, making Asian agriculture the prime focus for the studied market vendors. Smart tractors, UAVs, ground leveling services, satellite imaging, pesticide application, irrigation services, and handheld decision diagnostics and decision support are becoming more accessible for smallholder farmers in the region without investment in expensive infrastructure. In countries like Japan, the average farmer's average age is 67; therefore, with labor shortages, precision farming is significant for food production and security.

- Further, in December 2022, Indian fresh produce company IG International announced a collaboration with Fyllo, an AI, ML, IoT-driven, SaaS-based precision agriculture company. This was expected to help companies use precision farming with AI, ML, and IoT to produce high-quality fruits. As a part of Alliance, IG International's corporate farms would be integrated with 'Nero,' a

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soil analysis and irrigation management device.

- The Thailand Board of Investment promotes startup projects and companies through direct investment and business matchmaking services. Major drone companies, like DJI and XAG, are pushing their technology in the region through the value chain to create new local businesses based on advanced service options. ListenField, which connects satellites, drones, sensors, and on-farm data, delivers analysis and recommendations and collaborates with numerous organizations in Japan. One notable project involves working with universities in Japan, India, and Thailand on data-based farming in the face of climate change.
- India's agricultural policies have recently acknowledged the advantage of smart farming and focused on doubling farmers' income by 2022. The government also introduced the multilingual mobile app 'CHC-Farm Machinery,' enabling farmers to rent and implement farm machinery through a CHC in their area. Startups, such as Barton Breeze, have been doing hydroponic and other soil-less farming, and their farms continue to operate even in lockdown. According to DataLabs, India is estimated to have more than 1090 agritech startups, and this sector has been spearheading a revolution in technology, especially in drones, IoT devices, and data analytics to AI and satellite imagery.

Precision Farming Industry Overview

The precision farming market consists of several major players. In terms of market share, few of the significant players currently dominate the market. These major players, with a prominent market share, focus on extending their customer base across foreign countries. These firms leverage collective strategic initiatives to increase their market share and profitability. The companies performing in the market are also acquiring start-ups working on precision farming technologies to strengthen their product capabilities.

In November 2022, Elders and Precision Agriculture Pty Ltd. partnered to help farmers improve their nutrient utilization and increase the sustainability of their crops. The new arrangement made Precision Agriculture's specialized services, such as establishing soil management zones, individualized soil testing, and identifying significant soil restrictions, more easily accessible to Elders clients.

In March 2022, to maximize natural resources and enhance food security in Africa and other regions where the company would grow in the upcoming years, investment management firm Signature partnered with StartLife. The partnership could offer a path to on-farm validation of cutting-edge technologies for impact-driven tech startups.

Additional Benefits:

- The market estimate (ME) sheet in Excel format
- 3 months of analyst support

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