

# Global Smart Farming Market 2023

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## Abstracts

Smart farming is an approach to managing farms using modern information and communication technologies (ICT) to optimize the quantity and quality of agricultural products while minimizing the human labor required. It involves the use of sensors, software solutions, and data analytics to monitor and automate farming processes, making them more data-driven and efficient.

The global smart farming market is anticipated to increase by USD 17.6 billion till 2029 at an average annual growth of 12.7 percent as per the latest market estimates. The integration of IoT technology in the agricultural sector has revolutionized farming practices, allowing for seamless connectivity between machines and sensors on farms. This connectivity has paved the way for efficient data collection and analysis, empowering farmers to make well-informed decisions pertaining to crop management, irrigation, and livestock monitoring. Consequentially, productivity levels have soared, while resource efficiency has reached unprecedented heights.

Such technological advancements in agriculture have come at a crucial time as the global population continues to burgeon, intensifying pressure on the already strained food supply system. In this context, smart farming techniques, particularly precision agriculture, have emerged as a beacon of hope. By leveraging cutting-edge technologies, these techniques enable farmers to maximize crop yields and optimize resource utilization, addressing the daunting challenge of feeding a growing population.

The rapid progress in information and communication technology (ICT) has been a cornerstone in making smart farming more accessible and practical. The integration of sensors, automation, artificial intelligence (AI), and machine learning (ML) into agricultural operations has empowered farmers with unprecedented control and monitoring capabilities. From assessing soil conditions and managing water resources to controlling pests and ensuring crop health, these technologies have revolutionized

farming practices, spurring remarkable improvements in productivity and sustainability.

Moreover, the adoption of smart farming practices contributes significantly to environmental sustainability. By minimizing the reliance on pesticides, fertilizers, and water resources, farmers can effectively reduce their ecological footprint. Technologies like precision irrigation and crop monitoring play pivotal roles in this regard, enabling farmers to efficiently utilize resources, curtail waste, and mitigate the adverse impact of agricultural practices on the environment.

The report covers market size and growth, segmentation, regional breakdowns, competitive landscape, trends and strategies for global smart farming market. It presents a quantitative analysis of the market to enable stakeholders to capitalize on the prevailing market opportunities. The report also identifies top segments for opportunities and strategies based on market trends and leading competitors' approaches.

#### Market Segmentation

Product: hardware, software

Application: aquaculture, livestock monitoring and management, precision farming, others

Region: Asia-Pacific, Europe, North America, Middle East and Africa (MEA), South America

Software by type: control applications, operations management, predictive analytics

Hardware by type: farm computers and accessories, flow control valves, guidance and steering systems, sensors, yield monitors, others

This industry report offers market estimates and forecasts of the global market, followed by a detailed analysis of the product, application, and region. The global market for smart farming can be segmented by product: hardware, software. The smart farming market is experiencing significant growth, driven primarily by the hardware segment. This segment encompasses a wide range of devices and equipment used in smart farming practices. As innovative technologies and solutions are rapidly commercialized, there is an increasing demand for these products, particularly in developing regions.

One of the key features of smart farming is the collection and analysis of vast amounts of data. This data includes information related to crop and livestock monitoring, production, growth, and health. In order to effectively gather and utilize this data, a variety of hardware options are available.

Farm machinery automation and control is one area where smart farming hardware finds application. These devices are designed to automate and streamline various tasks performed on the farm, such as plowing, seeding, and harvesting. With precise sowing and harvest requirements, farmers can ensure optimal crop yield and quality.

Sensing and analytical devices are also an essential part of the smart farming hardware ecosystem. These devices collect data on soil moisture, temperature, humidity, and other environmental factors. By monitoring and analyzing this data, farmers can make informed decisions regarding irrigation, fertilization, and pest control, leading to improved efficiency and resource management.

Indoor farming facilities, such as greenhouses, rely heavily on smart farming hardware to maintain ideal climatic conditions. Sensors and control systems enable farmers to regulate temperature, lighting, and humidity levels, creating an optimal environment for plant growth. This allows for year-round cultivation of crops and greater control over the farming process.

Furthermore, the increasing adoption of emerging technologies has played a significant role in the growth of smart farming hardware. The Internet of Things (IoT) enables connectivity between devices and the seamless exchange of data, facilitating real-time monitoring and decision-making. Blockchain technology provides secure and transparent data management, ensuring the integrity of information collected from different sources. Artificial intelligence (AI) and machine learning algorithms enable predictive analytics and advanced decision support systems. 3D printing technology offers the potential for on-demand manufacturing of customized farming equipment and spare parts.

Smart farming market is further segmented by application: aquaculture, livestock monitoring and management, precision farming, others. The precision farming segment was the largest contributor to the global smart farming market in 2022. Precision farming, also known as precision agriculture, revolutionizes agricultural practices by leveraging smart technologies and solutions to enhance efficiency and productivity. By utilizing precision farming techniques, farmers can achieve optimal results in terms of yield, quality, and quantity while minimizing wastage.

This innovative approach to farming relies on real-time observation, measurement, and responses to the variability within and between crops, fields, and animals. Through precision farming, farmers can accurately calculate the required amounts of inputs, such

as feed and fertilizers, to maximize outcomes. This not only reduces costs and labor but also increases returns per unit of input utilized.

One of the key advantages of precision farming is the potential for increased crop yields and improved animal performance. By precisely addressing the specific needs of each plant or animal, farmers can optimize their growth and well-being. This leads to higher profitability and a more sustainable agricultural production system.

Moreover, precision farming aims to promote occupational safety and minimize the environmental impact of agricultural practices. By implementing advanced sensor technologies and specialized software, farmers can establish a seamless connection between spatially distributed variables and appropriate agricultural activities. For example, precision farming enables farmers to determine the ideal timing and dosage for tillage, seeding, fertilization, herbicide and pesticide application, and harvest. This targeted approach reduces resource wastage and minimizes the ecological footprint of farming operations.

The progress of information and communication technologies (ICT) has played a crucial role in making precision farming a reality. These advancements, coupled with sensor technologies and specialized software, have empowered farmers to effectively manage and control the various aspects of their agricultural operations. The integration of geospatial data, weather information, and crop monitoring systems allows for informed decision-making and precise actions.

Based on region, the smart farming market is segmented into: Asia-Pacific, Europe, North America, Middle East and Africa (MEA), South America. North America is estimated to account for the largest share of the global smart farming market.

The software by type market is further segmented into control applications, operations management, predictive analytics. Among them, operations management segment accounted for the largest market share in 2022. Moreover, it is expected to expand the highest CAGR during the forecast period. Furthermore, the hardware by type market has been categorized into farm computers and accessories, flow control valves, guidance and steering systems, sensors, yield monitors, others. The sensors segment captured the largest share of the market in 2022 and is expected to maintain its dominance during the forecast period.

#### Major Companies and Competitive Landscape

The report also provides analysis of the key companies of the industry and their detailed

company profiles including Deere & Company, CNH Industrial NV, AGCO Corporation, Kubota Corporation, CLAAS Group, Osram Licht AG, Signify Holding N.V., BASF SE, Trimble, Inc., GEA Group AG, AKVA Group, among others. In this report, key players and their strategies are thoroughly analyzed to understand the competitive outlook of the market.

#### Scope of the Report

To analyze and forecast the market size of the global smart farming market.

To classify and forecast the global smart farming market based on product, application, region.

To identify drivers and challenges for the global smart farming market.

To examine competitive developments such as mergers & acquisitions, agreements, collaborations and partnerships, etc., in the global smart farming market.

To identify and analyze the profile of leading players operating in the global smart farming market.

#### Why Choose This Report

Gain a reliable outlook of the global smart farming market forecasts from 2023 to 2029 across scenarios.

Identify growth segments for investment.

Stay ahead of competitors through company profiles and market data.

The market estimate for ease of analysis across scenarios in Excel format.

Strategy consulting and research support for three months.

Print authentication provided for the single-user license.

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