

Farm Management Software *Market Scenario and Competitive Landscape*

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Context

This report provides an overview of the **farm management software market**, with reference the trend and dynamics in the period 2023 – 2028, the case studies, the market segmentations by offering, application, production planning and region and the competitive landscape in the field, especially at the European level.

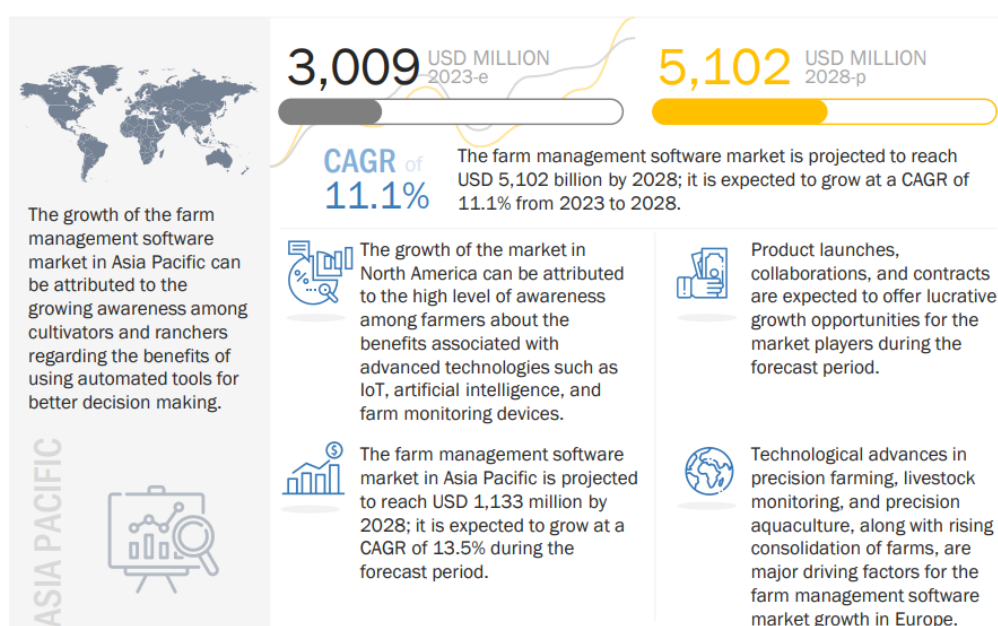
1 Farm Management Software

In precision farming applications, **farm management software** helps farmers or growers to watch over harvest, crops, chemicals, fertilizers, planting, tillage, contracts, elevator inventory, expenses, net income, custom trucking, and field mapping. Farm management software gathers real-time information about animal health, feeding behavior, hygiene, location tracking, etc., in livestock farming. It helps to improve the livestock management process, enhance productivity, and improve the quality of production.

1.1 Global Market and Market Dynamics

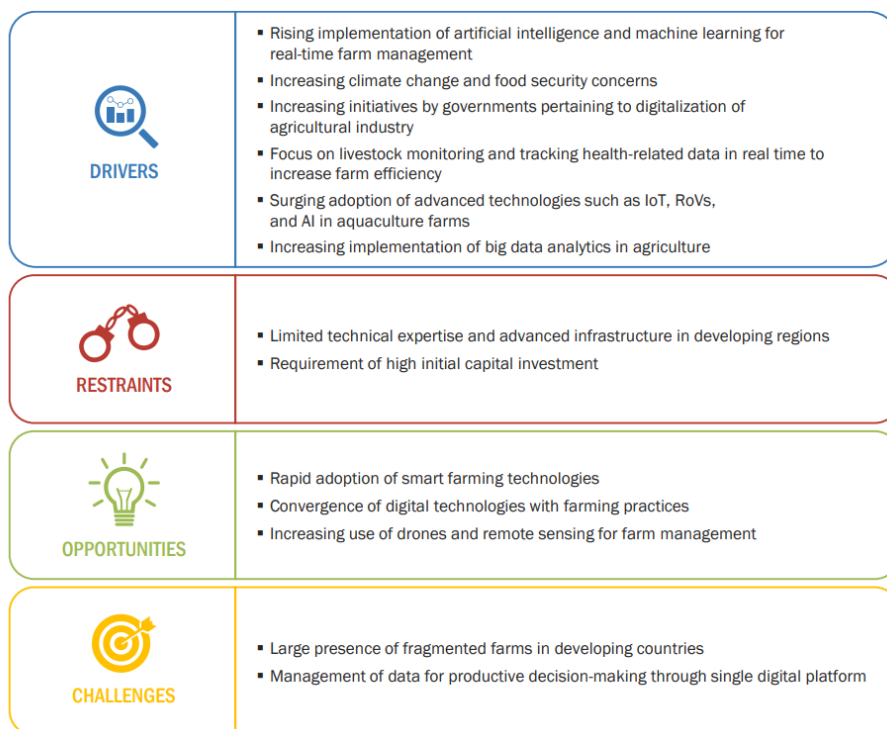
The **global farm management software market** is estimated to grow from USD 3,009 million in 2023 to USD 5,102 million by 2028 at a Compound Annual Growth Rate (CAGR) of 11.1% during the same period (Figure 1).

Figure 1. Global Farm Management Software Market in the Period 2023 - 2028



The **growth** of the farm management software market is driven by factors such as increasing implementation of cloud computing in real-time farm data management, growing population and subsequent rise in demand for food worldwide, and strengthening of intellectual property rights over agricultural innovations. Government support to encourage the adoption of modern agricultural techniques and focus on monitoring livestock performance and health to increase farm efficiency are also driving the growth of the farm management software market (Figure 2).

Figure 2. Drivers, Restraints, Opportunities and Challenges in Farm Management Software Market



The main **drivers, restraints, opportunities and challenges** for the farm management software market are further described in the following Figures.

Restraints

Figure 3. Impact Analysis of Restraints on Farm Management Software Market

RESTRAINTS	2 YEARS	5 YEARS	REASONS
Limited technical expertise among farmers and advanced infrastructure in developing regions	●	●	▪ The inability of some farmers to understand the processes to use farm management software, agricultural data handling, and its use in decision making acts as a restraining factor for the growth of the farm management software market.
Requirement of high initial capital investment	●	●	▪ Farmers need to pay an additional cost for the integration of software with the hardware devices and also for further consultation to use as these software solutions as they are complex to use.
IMPACT LEVEL: ● HIGH ● MEDIUM ● LOW ● VERY LOW			

Drivers

Figure 4. Impact Analysis of Drivers on Farm Management Software Market

DRIVERS	2 YEARS	5 YEARS	REASONS
Rising implementation of artificial intelligence and machine learning for real-time farm management	●	●	- Data management in agriculture plays a vital role as the management decisions are based on the real-time data analysis derived from farm activities. - The penetration of artificial intelligence and machine learning has enabled real-time access to data that simplifies data management activities such as planning, purchasing, feeding, harvesting, marketing, and inventory control.
Increasing climate change and food security concerns	●	●	- The global agriculture industry is growing rapidly, it is also facing tremendous pressure due to climate change and unpredictable weather conditions. - As land resources for agriculture are decreasing, policy makers are facing challenges of sustainability and feeding the rapidly growing world population.
Increasing initiatives by governments pertaining to digitalization of agricultural industry	●	●	- Governments around the world are taking several initiatives to boost agriculture production, develop high-quality seeds, and increase storage capacities. - Incentives and guidance are being offered at various levels to increase food production with limited resources, such as land, fertilizer, and water.
Increasing focus on livestock monitoring and tracking health-related data in real-time to increase farm efficiency	●	●	Farm management software captures, analyzes, and manages physical trading, procurement, logistics, bulk handling, and compliance components through crops, livestock, and other agriculture-based businesses, providing real-time information and intelligence capabilities to optimize decision-making.
Surging adoption of advanced technologies such as IoT, RoVs, and AI in aquaculture farms	●	●	With the implementation of smart technologies in livestock monitoring, the growers get real-time data on animal behavior, their health, feeding behavior, food and water quality, bio-security, hygiene levels, and others. It also helps in tracking the location of the animals through GPS technology.
Increasing implementation of Big data analytics in agriculture	●	●	Big data provides farmers granular data on rainfall patterns, water cycles, fertilizer requirements, and more. This enables them to make smart decisions, such as what crops to plant for better profitability and when to harvest.
IMPACT LEVEL: ● HIGH ● MEDIUM ● LOW ● VERY LOW			

Opportunities

Figure 5. Impact Analysis of Opportunities for Farm Management Software Market

OPPORTUNITIES	2 YEARS	5 YEARS	REASONS
Rapid adoption of smart farming technologies	●	●	- Artificial intelligence (AI) is a promising technology capable of catering to the ongoing food demand from the agriculture sector through increased production. - The combination of IoT and advanced analytics through AI allows farmers to analyze real-time data related to weather conditions, temperatures, moistures, and crop prices in the market.
Convergence of digital technologies with farming practices	●	●	The growing demand for high quality agricultural output for the rising population needs to be met with improvisations in the current agricultural practices. Therefore, adoption of modern farming practices which enhances the decision-making system of the farmers needs to be adopted so as to increase the productivity of the agricultural field.
Increasing use of drones and remote sensing for farm management	●	●	Drones deliver better and more accurate data with higher resolution in comparison to satellites. The increased usage of drones and remote sensing in agricultural fields can help create the opportunities to strive the growth of this market.
IMPACT LEVEL: ● HIGH ● MEDIUM ● LOW ● VERY LOW			

Challenges

Figure 6. Impact Analysis of Challenges on Farm Management Software Market

CHALLENGES	2 YEARS	5 YEARS	REASONS
Large presence of fragmented farms in developing countries			- Developing countries such as India, Brazil, Argentina, and China hold large number of fragmented farmland. - Farmers in these countries are reluctant to use farm management software solutions mainly due to high initial investment for implementing farm management software solutions, low ROI, availability of cheap labor, and limited adoption of modern farming practices.
Management of data for productive decision making			Huge amount of data is regularly generated by using farm management software solution. This data needs to be stored and managed in a proper format to make farming-related decisions such as mapping, variable rate seeding, soil testing, yield monitoring, and historical crop rotation.
IMPACT LEVEL:  HIGH  MEDIUM  LOW  VERY LOW			

1.2 Case Studies

This section provides a detailed explanation of the use cases of farm management software solutions. The list of case studies provided below is not exhaustive but shows major case studies.

Maximized Yield for Cassava Plantation Business	
Background	A plantation enterprise in a western African country cultivates Cassava crops over 3,000 Ha of land area. Considering the large size of the plantation, managing the end-to-end field activities was a bit challenging for the agribusiness. Hence, the enterprise was looking for an efficient software platform that could streamline its plantation management activities.
Challenge	The challenges included identifying mortality or non-germination of cassava stems in the early stage of the crop cycle and making appropriate replanting plans and executing the same; these were challenging tasks due to the unavailability of real-time data. Another challenge was the yield losses; huge replanting costs were the risk the client faced due to unplanned replanting tasks.
Solution	FarmERP first evaluated the existing conditions as well as the challenges faced by the Cassava plantation enterprise. Based on this assessment, FarmERP used FarmGyan, an agriculture intelligence platform, which provided an AI-based model for the standard plant count of Cassava using drone imagery. The number of plants over the plantation area and plant density per Ha were calculated by the AI model every time the drone images were fed. It also helped to calculate and estimate yield outputs based on plant count. Satellite-based crop health monitoring using different vegetation indices was also provided by FarmERP to the plantation enterprise. It also enabled the planning and execution of agronomic activities such as irrigation, fertilizer application, etc., based on the analysis of satellite-based vegetation indices.
Result	FarmERP helped the western Africa-based enterprise to gain complete control over its Cassava plantation management. The critical concerns of inefficient plantation management, low-quality yields, and revenue losses were eliminated by FarmERP.
Whitesides Used Agworld Software Platform for Record Keeping And Custom Fertilizer Application	
Background	The Whitesides family started their dairy operation in Rupert, ID, in the late seventies. Fast-forward 40 years, and much has changed—the dairy now milks 6,700 cows and grows their feed on 6,500 acres of adjacent land. The operation is currently managed by the second generation of Whitesides, and depending on the season, Whitesides Dairy employs about 100 people between the dairy and the farming operation. The Whitesides family had been investigating farm management software solutions for a few years and even tried one out for a while without success.

Challenge	Whitesides Dairy decided to adopt Valley Agronomics' award-winning Platinum Precision Subscription Program, which is delivered on the Agworld Platform. When Whitesides adopted the Agworld Platform, they were mainly looking for a record-keeping tool. When they realized the analysis and reporting power of Agworld, they soon started using it too. They use most of the manure from their dairy in their cropping operation, as well as some commercial fertilizer; it is important that the farmers keep track of how much nutrition they apply to their fields. They also test their manure for nutritional contents and enter it in Agworld as a 'custom fertilizer'; this allows them to make sure that they do not apply too much of a nutrient that, in excess, could be detrimental to the crop.
Result	By utilizing Agworld, Whitesides Dairy have simplified their record-keeping process and improved data accuracy. They have found Agworld easy to use and have saved a lot of time capturing farm data. Making data-driven decisions is quicker than ever, and the data is more reliable, as it has all been captured using Agworld's structured data.

Anna Binna Farms Used Agworld Software Platform for Farm Record-Keeping System and Pre-Emergent Herbicides

Background	Anna Binna Farms is a 6,500-hectare farming operation at Maitland on South Australia's Yorke Peninsula that grows a rotation of lentils, wheat, barley, and canola, with hay production happening as well in some years, depending on the season. Owner Ben Wundersitz runs Anna Binna Farms together with a team of four full-time staff and, therefore, must make sure that any system put in place is well suited to both the size of the farm and the skills of the team.
Challenge	Up until 2013, Anna Binna farms relied solely on a pen-and-paper system for their farm records. This system did not fit well with the abilities of all team members and did not offer owner Ben Wundersitz a good way to track important information, such as withholding periods, amount of fertilizer or chemicals that need to be purchased, or any other spray-related information.
Solution	Ben realized how, through Agworld, they could collaborate as a team on the same platform and minimize the need for data entry by receiving recommendations on the same platform.
Result	By using Agworld, the whole team at Anna Binna Farms now has access to the farm records in Agworld and can turn recommendations from their agronomist into actual records as soon as an operation is finished, enhancing accuracy. By having his rotation for the season ahead planned in Agworld, Ben Wundersitz is now able to forward order all his chemicals and other inputs. Ben is also able to create accurate budgets through his farm records, which allow for in-depth analysis.

Lilliput Ag Aims to Improve Planning by Capturing Data With Agworld Platform

Background	Lilliput Ag is a farming enterprise comprising 2,400 hectares just west of Rutherglen in Victoria. Lilliput Ag produces seeds for wheat, barley, faba beans, triticale, oats, lupins, safflower, and canola, while Baker Seed Co. focuses on processing and selling these seeds to growers. Quality requirements are very stringent when producing seed, and Lilliput's agronomic practices and constant quest for data to enable improvements in production reflect this.
Challenge	Lilliput Ag grows a variety of crops and produces seeds for sister-business Baker Seed Co. Lilliput Ag looked to adopt a newer recording platform linked to the cloud to try and track production data. The enterprise was able to connect production data to its finance software.
Solution	The enterprise adopted the Agworld platform. Lilliput's agronomist, Andrew Bell, with IK Caldwell, was already using Agworld to record all observations and recommendations, so a lot of data entry was already happening regardless. The Agworld platform enabled them to create an agronomic plan with their agronomist. With Agworld, they can plan the season ahead as accurately as possible, with the availability of historical data.
Result	By collaborating with their agronomist on the same platform, Lilliput Ag can easily record all critical production data. Planned production data for Lilliput Ag is now available in Agworld so that financial data can directly be derived from it. Lilliput Ag is now able to make better-informed crop management decisions.

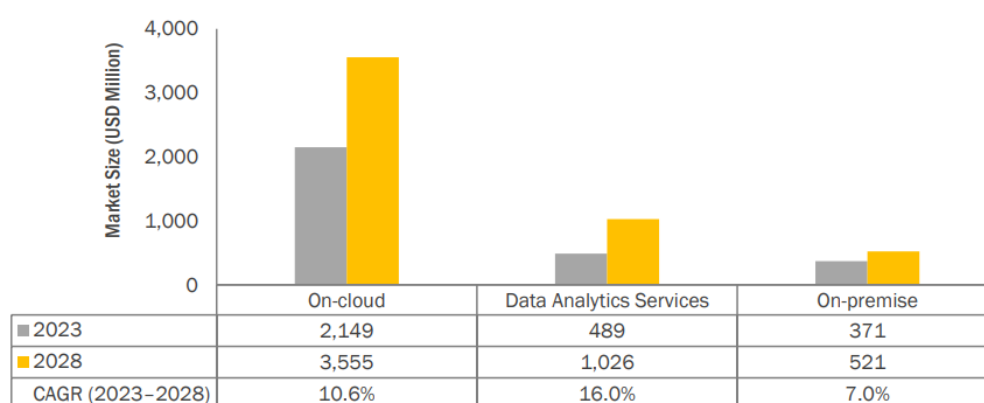
Sproule Farms Achieved Traceability and Real -Time Information About Their Field With Conservis Platform	
Background	Founded in 1993, Sproule Farms is in the Red River Valley of North Dakota. Community is key to Sproule Farm's vision, and they partner with organizations that fight poverty. Their team hosts an annual food drive where guests donate canned food in exchange for fresh sweet corn. Sproule is constantly striving to increase yields and improve profit, so they looked to Conservis to proactively manage field data.
Challenge	Spread over thousands of acres, Sproule Farms has 17 employees who are often moving in different directions. The challenge was the traceability of each spot and everything, real-time information, and historical records.
Result	When Conservis came along, Sproule immediately began using the harvest module and implemented input tracking. Also, recordkeeping has been a huge benefit for Sproule Farms. With the use of Conservis farm management software solutions, Sproule farms could easily communicate between field and office and plan, which led to improved yields and cost-saving efficiencies.

1.3 Market Segmentation by Offering

The farm management software market has been segmented based on offering into: **on-premise delivery model, on-cloud delivery model and data analytics services** (Figure 7). The farm management software market for the **on-premise** offering was valued at USD 371 million in 2023 and is expected to reach USD 521 million by 2028, at a CAGR of 7.0% from 2023 to 2028. The farm management software market for **data analytics services** was valued at USD 489 million in 2023 and is expected to reach USD 1,026 million by 2028, registering the highest CAGR of 16.0% from 2023 to 2028. The major reason for the high growth of the farm management software market is the increasing adoption of data analytics services by farm owners owing to the insights provided by the predictive analytics tools that can be adopted to improve productivity and make farming operations more efficient.

The market for **on-cloud** offerings was valued at USD 2,149 million in 2023 and is expected to reach USD 3,555 million by 2028, at a CAGR of 10.6% from 2023 to 2028.

Figure 7. Farm Management Market, by Offering, in the Period 2023 – 2028 (USD Million)



1.3.1 On-cloud

An **on-cloud** model uses the internet to facilitate shared processing and handling of data and services to users on demand. Farmers are extensively using on-cloud software offerings as cloud-based delivery model is highly scalable. Unlike the heavy capital expenditure incurred by on-premises delivery models through the creation of infrastructure, on-cloud offerings only have a subscription price that must be paid periodically for the services. Such benefits have resulted in the massive adoption of the on-cloud delivery model over the last decade, and the same trend is expected to continue in the coming years. A cloud-based agricultural system includes the installation of intelligent AI sensors, which are

interconnected in real time over the cloud computing infrastructure. This collected data will then be benchmarked against the prescribed metrics related to any crop, which will include factors like moisture, humidity, and temperature. Using the data collected, the farmers will apply fertilizers, pesticides, and water whenever it is needed, resulting in the efficient and effective use of resources. These sensors will continuously transmit real-time data to farmers on various parameters. A cloud-based delivery model centralizes data storage and arranges software networks and servers in groups. Apart from that, such a delivery model also offers benefits such as data sharing, the ability to access systems on a variety of devices from any location having internet service, and enhanced performance. Some of the companies that provide cloud-based farm management software solutions are Trimble, Inc. (US) and DeLaval (US). A cloud-based software provides a decision-support application platform with decision-support tools and data analytics for managing farm information.

AgroStar, an Indian AgTech startup, launched a cloud-based mobile app that boosts crop yields for small farmers in India. The firm integrated Google Cloud in order to expand its offering. It now uses cloud-based analytics and is deploying machine learning models to provide timely advice in five languages on everything, including seed optimization, crop rotation, irrigation requirement, soil nutrition, and pest control.

The **on-cloud market segment by deployment** is reported in the following Table.

Table 1. On-Cloud: Farm Management Software Market, by Deployment, 2023–2028 (USD Million)

On-cloud	2023	2024	2025	2026	2027	2028	CAGR (2023–2028)
SaaS	1,443	1,624	1,793	1,961	2,133	2,311	9.9%
PaaS	706	810	911	1,017	1,127	1,244	12.0%
Total	2,149	2,433	2,704	2,978	3,261	3,555	10.6%

Software as a service (SaaS) involves delivering applications and services to users over the internet. In SaaS, the software is hosted remotely on a cloud, either privately or in a shared space, and accessed by users like farm owners and growers with the help of the internet. Since it is hosted remotely, the farm owner does not require to invest in the infrastructure needed for the software. The maintenance is also undertaken remotely by the service provider. SaaS-based agriculture is an efficient farming method that can eliminate all food safety concerns precisely with agriculture technology solutions. It promotes the use of technology in weather pattern predictions, yield projections, and probability mapping of diseases. SaaS-based agriculture can enhance the food safety efforts of agribusinesses by curtailing critical losses during production and post-harvest stages. Some of the major providers of SaaS-based farm management software are Agrivi (UK), CropIn (India), Granular (US), Conservis, CropX Inc., AeroFarms, and Bright Farms.

In **platform as a service (PaaS) delivery model**, a platform is provided to the user on which multiple applications can be developed and customized as per the user's need. In PaaS, services are hosted on a cloud and accessed by users over the internet with customized features. PaaS applications do not require any hardware or software to be developed externally for the applications to run on the provided platform. This saves infrastructure or set-up costs for the farm owners. The hardware associated with the service is hosted by the service provider, enabling complex applications to be developed on the platform provided to simplify many processes. The major companies providing PaaS-based farm management software are SST Development Group (US) and Trimble (US).

1.3.2 Data analytics services

Farm owners and agronomists are rapidly adopting **data analytics services** for developing data-driven strategies to maximize profits and reduce operational costs. Data pertaining to crops, weather, livestock health, equipment, and

processes are collected with the help of IoT devices such as sensors, GPS, and smart camera systems. This data is then stored in a cloud and data analytics solutions generate insights with that data for effective decision-making.

Analytics software tools identify trends by analyzing historical data. Farm owners can leverage these predictive analytics insights and make decisions about their farms to maximize profits. The ability to gain insights from data, create algorithms, and invent new technologies, along with the combination of shared information, smart technology, and innovation, can accomplish significant feats for the agribusiness industry.

AgriTech dashboards and analytics solutions leverage data automation and visualization for farmers. When data is extracted into a backend system, it can be integrated into a customizable **dashboard easy user interface**. It presents mapping information and field and crop data and shows the status of integrated equipment. A **customizable dashboard** can track all set conditions and alert farmers when important changes take place. Once the dashboard is set up, all data gathered by sensors, irrigation equipment, weather forecasts, and other sources can be automatically updated and secured. Based on these yield reports, farmers can plan their actions in order to improve the management of their crops and increase yields. With the help of analytics services, farm owners can identify the crops that are growing well in the existing conditions and find a suitable market for that crops. Farm owners can also monitor the fields and identify the regions in the farm where the productivity is less with the help of GPS or satellite-based imaging techniques and take corrective actions at the right time.

Major companies providing these services are The Climate Corporation (US), aWhere (US), FarmLogs (US), FarmerEdge (Canada), AgDNA (Australia), and Conservis Corporate (US). Agricultural analytics startup, CropX, provides data-driven farming solutions that address a global sustainability issue: insight into soil conditions.

1.3.3 On-premise

An **on-premise software** is installed on the computers that are present at the end user premises, rather than being facilitated remotely like a cloud or a server farm. The license fee for these on-premise software needs to be paid only once. Hence, farm owners incur slightly reduced ownership costs for a longer period of time.

Agricultural enterprises more often consist of heterogeneous networks of sensors and devices that must be able to operate under a wide variety of environmental conditions and monitor soil conditions, light levels, water usage, and equipment assets.

For instance, On-Premise IoT software such as Machinechat's JEDI One enables system integrators and developers to quickly deploy data collection, visualization, monitoring, rules and notifications, and local data storage without the need to spend weeks and months developing custom software and applications. By normalizing and managing data within the local enterprise, data security is enhanced, and cloud data processing costs are reduced.

On-premise software provides higher data security compared to an on-cloud setting. This is owing to the fact that third parties or unauthorized people cannot access the farm data as it is not stored in a shared space. Another advantage of on-premise software is that farm owners do not incur high internet costs to retrieve or access data. But on the downside, on-premise systems need an external IT support team that manages and upgrades the software regularly, incurring heavy costs. The requirement of an infrastructure to handle data, the inability to transfer data, and the lack of remote access to data are the other major drawbacks of on-premise software.

On-premise applications require **suitable infrastructure and IT personnel** to be managed, which involve heavy costs; as a result, only bigger farms in precision agriculture, livestock farms, and precision aquaculture can afford this platform. Lower technology cost in the Americas and Europe is a key driver for the growth of the on-premise farm management software market.

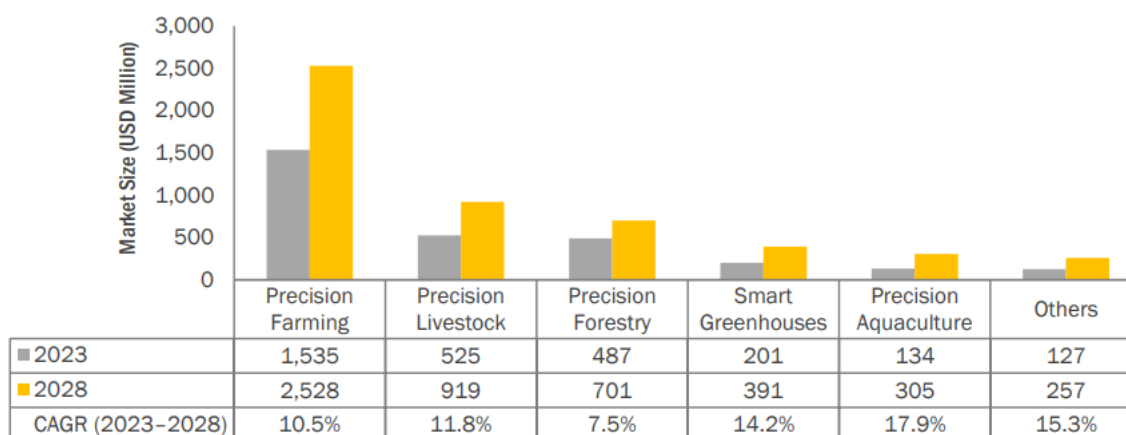
1.4 Market Segmentation by Application

The farm management software market has been segmented by application into: **precision farming, precision livestock, precision aquaculture, precision forestry, smart greenhouses, and others** (include vertical farming, floriculture, cannabis, research centers, vineyards and orchards) (Figure 8). Farm management software comprises multiple applications for optimizing the use of resources needed for farming and assisting farmers to improve crop yields. These applications are customized for specific purposes like yield monitoring, field mapping, weather tracking and forecasting, feeding management, milk harvesting, fish tracking, and HVAC management. These applications require several hardware devices such as display systems, global positioning systems (GPSs)/global navigation satellite systems (GNSSs), sensors, and farm data management systems. Farmers are extensively using these applications to reduce costs, get higher returns, and optimally use resources. Some of the major providers of such applications are (US), Trimble (US), AG Leader Technology (US), Afimik (Israel), and The Climate Corporation (US).

The farm management software market for **precision farming** application was valued at USD 1,535 million in 2023 and is expected to reach USD 2,528 million by 2028, at a CAGR of 10.5% from 2023 to 2028. Increasing demand for food due to the rapid increase in population is a significant factor in the adoption of farm management software and other precision farming techniques by farmers across the world.

The farm management software market for **precision livestock** was valued at USD 525 million in 2023 and is expected to reach USD 919 million by 2028, at a CAGR of 11.8% from 2023 to 2028.

Figure 8. Farm Management Software Market, by Application, in the Period 2023 – 2028 (USD Million)



Precision farming or precision agriculture is a farming concept that involves digital techniques to monitor and optimize agricultural processes, efficiently use resources, and improve productivity. Precision farming is a farm management concept that revolves around the process of observing, measuring, and responding to various inter-and intra-field variability inputs for modern agriculture. It is a technology-enabled approach to farming management that observes, measures, and analyzes the needs of individual fields and crops. Precision farming uses technologies such as GPS, variable rate technology, and other IoT and AI technologies to monitor crops, automate farming activities, and regulate the use of pesticides, fertilizers, and water.

The software platform allows these precision farming IoT devices to store data on the cloud and analyze such data, which can help growers in better decision-making at the right time. The increasing demand for food worldwide, growing visibility regarding the extended profitability and production achieved due to the implementation of advanced techniques in

farming, and monitoring of crops to yield production benefits are the major factors contributing to the growth of the farm management software market for precision farming.

Using advanced descriptive, predictive, and prescriptive analytics engines to analyze the data, precision agriculture arrives at data-driven management decisions to implement cost-effective, environment-friendly, sustainable modern farming solutions.

The **precision farming market sub-segment by application** is reported in the following Table.

Table 2. Precision Farming: Farm Management Software Market, by Application, 2023–2028 (USD Million)

Application	2023	2024	2025	2026	2027	2028	CAGR (2023–2028)
Soil & Crop Monitoring	765	870	972	1,069	1,165	1,258	10.5%
Yield Monitoring & Harvesting	280	317	353	387	421	452	10.1%
Irrigation & Weather Forecasting	91	105	119	133	147	162	12.3%
Inventory Management	65	73	81	89	96	104	9.9%
Crop Insurance & Financial Management	57	64	70	75	80	85	8.1%
Equipment Monitoring & Maintenance	44	50	55	60	65	70	9.5%
Farm Labor Management	25	28	30	32	34	35	7.3%
Others	208	239	271	301	332	362	11.8%
Total	1,535	1,746	1,952	2,147	2,340	2,528	10.5%

Farmers are using IoT- and cloud-based solutions to detect and monitor soil moisture and soil and crop health and make data-driven decisions to improve productivity. The **soil and crop monitoring** segment is expected to register a CAGR of 10.5% from 2023 to 2028. Some of the major technologies used in precision farming include GPS/GNSS-based guidance technology. GPS technology is used for site-specific actions, monitoring farms, and helping farmers understand the requirements of specific areas in farms. GPS technology offers various benefits—it minimizes overlapping and spraying gaps, reduces fertilizers and chemical costs, and reduces the impact of fertilizers and chemicals on the environment. Remote sensing technology is used to monitor crops or the fields without being physically present in the fields. Remote sensing imagery helps in identifying the growth rate, mapping soil variations, monitoring field variability, detecting pest-infected or diseased plants, and enhancing crop input. These technologies are based on advanced software that helps to monitor farm operations continuously by sending data on a cloud platform and further analyzing such data for recommendation to farmers or growers at the right time.

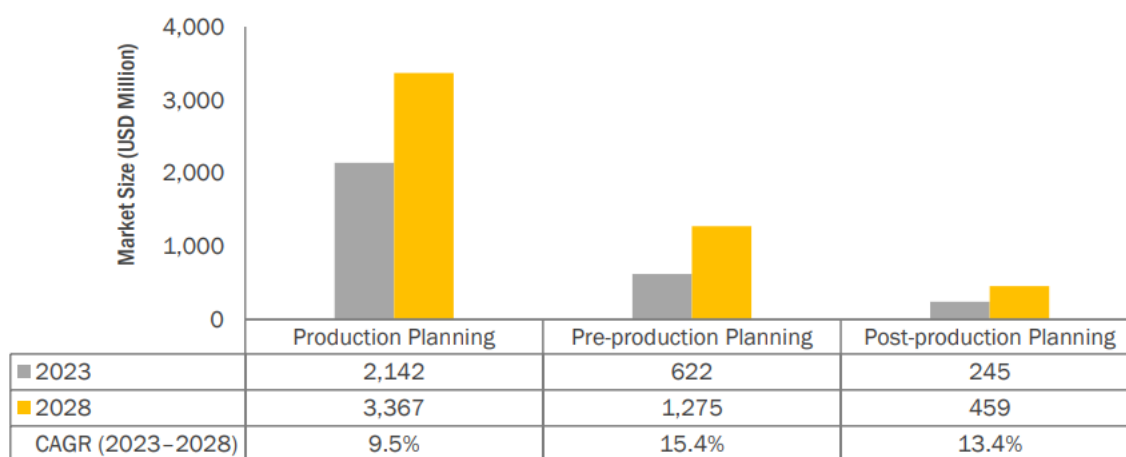
1.5 Market Segmentation by Production Planning

By farm production planning, the farm management software market has been segmented into: **pre-production planning, production planning, and post-production planning activities** (Figure 9). The **pre-production stage** involves planning how resources can be conserved and used to improve the productivity and quality of crops, livestock, and aquaculture. In precision forestry, pre-production planning involves soil sampling and genetics and nurseries.

In the **production planning** stage, farmers or growers monitor production activities to ensure that productivity is maximized and the produce is of good quality. Major processes in the production planning stage include monitoring the nutrient level of soil, tracking fluctuations in weather, planning and scheduling irrigation, and overseeing the harvesting process.

The **post-production** stage is the stage after the harvesting. Processes such as cleaning, inventory management, and sorting and storing of produce are included in this stage. Farm management software, along with sensors, cloud-based services, IoT devices, AI, and GPS- and satellite-based imaging techniques, is being adopted by farmers to carry out these processes with increased efficiency and reduced costs.

Figure 9. Farm Management Software Market, by Production Planning, in the Period 2023 – 2028 (USD Million)



1.6 Market Segmentation by Region

The farm management software market by region has been segmented into: **Americas, Europe, Asia Pacific and Rest of the World (RoW)** (Table 3). The market in the **Americas** is expected to reach USD 1,955 million by 2028, at a CAGR of 9.8% from 2023 to 2028. Countries in the Americas, such as the US and Canada, are early adopters of farm management software, which is one of the major reasons for the high market growth. High level of awareness among farmers about benefits associated with advanced technologies such as IoT, artificial intelligence, and farm monitoring devices, high penetration of the internet in countries such as the US and Canada, and the presence of large farms are the key factors responsible for the higher adoption rate of farm management software in the Americas.

The farm management software market in **Europe** was USD 890 million in 2022 and is expected to reach USD 1,689 million by 2028, growing at a CAGR of 11.1% from 2023 to 2028.

The farm management software market in **Asia Pacific** is expected to grow to USD 1,133 million by 2028, at a CAGR of 13.5% from 2023 to 2028. Asia Pacific is likely to be the fastest-growing farm management software market during the forecast period. The growth prospects of the market in Asia Pacific are very high as farm management software is still a nascent technology in many countries in the region. Limited penetration of the internet, relatively smaller farm sizes, availability of inexpensive labor, and high initial setup costs are a few barriers to market growth in Asia Pacific. However, due to the rapid increase in population and the consequent need to cope with the increasing demand for agricultural products, farmers are adopting farm management software solutions and other advanced agricultural practices in precision agriculture, livestock monitoring, and aquaculture farms.

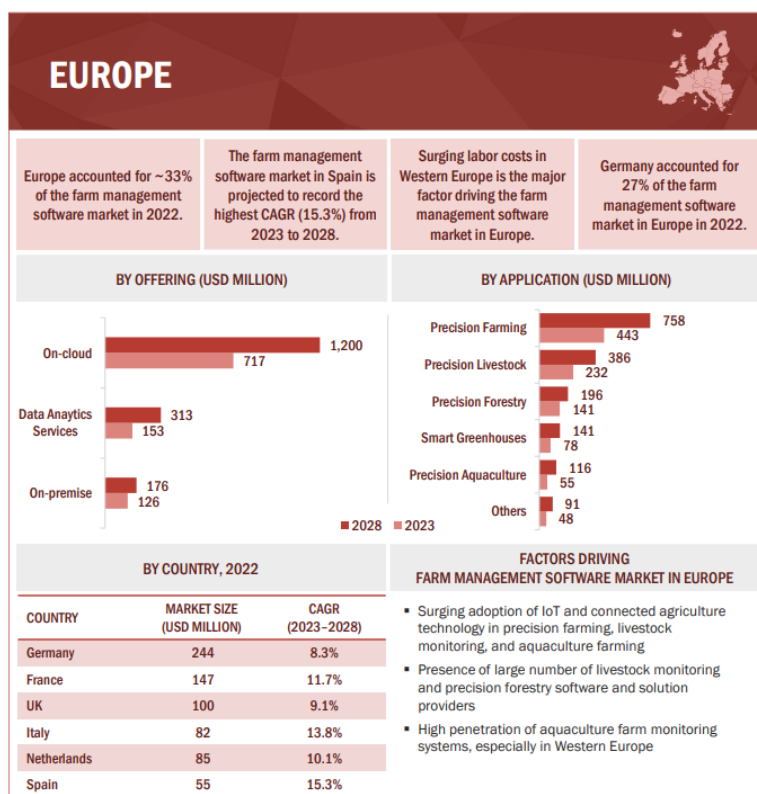
Table 3. Farm Management Software Market, by Region, 2023–2028 (USD Million)

Region	2023	2024	2025	2026	2027	2028	CAGR (2023–2028)
Americas	1,223	1,368	1,514	1,659	1,807	1,955	9.8%
Europe	996	1,125	1,259	1,396	1,540	1,689	11.1%
Asia Pacific	600	694	793	899	1012	1133	13.5%
RoW	189	214	240	267	296	325	11.5%
Total	3,009	3,401	3,806	4,222	4,655	5,102	11.1%

1.6.1 Focus on Europe

Advanced farming technologies and solutions are widely adopted in **Europe**. European farmers extensively use modern agriculture technologies, such as yield monitoring, guidance and steering, variable rate application, and crop scouting. A major hindrance to the growth of the farm management software market in Europe is the high initial cost. Even though farmers with larger farmlands are implementing farm management software, farmers with smaller farmlands cannot use advanced agricultural practices easily due to the **high initial cost of technologies**. The formation of the Common Agriculture Policy (CAP) by the European Union has changed agricultural techniques in this region. CAP has been instrumental in the increased adoption of farm management software and other advanced agriculture technologies in many European countries, including Germany, France, and Eastern European countries.

Figure 10. Snapshot: Farm Management Software Market in Europe, 2022



Note: Rest of Europe, which comprises of Russia, Austria, Sweden, Finland, Belgium, Hungary, and the Czech Republic, has been excluded from the snapshot.

Italy is one of the top maize grain producers in the European market. Currently, agriculture in Italy is a highly mechanized process involving the use of traditional mechanized lines, farm management software, and advanced devices to monitor agriculture remotely and enable data-driven decision-making.

In June 2019, Taste of Italy, an Italian fund specializing in agri-food, acquired a majority stake in ABACO. ABACO is now a subsidiary of Taste of Italy which DeA Capital Alternative Funds SGR manages.

1.7 Competitive Landscape

The **key players** in the farm management software market include Trimble Inc. (US), Raven Industries (US), Topcon (US), Granular Inc. (US), Agrivi (UK), AgJunction Inc. (US), Farmers Edge Inc. (Canada), Agworld Pty Ltd (US), Deere & Company (US), IBM Corporation (US), SST Software (US), Climate LLC (US), Microsoft (US), Afimilk Ltd. (Israel), GEA Farm Technologies (Ukraine), CropX Inc. (Israel), Conservis (US), Cropio (Ukraine), CropIn Technology Solutions Private Limited (India), ec2ce (Spain), Gamaya (Switzerland), Connecterra B.V. (Netherlands), Aquabyte (US), and Eruvaka Technologies (India). These players have adopted product launches, expansions, agreements/partnerships, collaborations, and acquisitions as the key strategies to grow in the market. All key product manufacturers that are part of the farm management software ecosystem have been considered under the company profiles section.

The farm management software market is **fragmented** with the presence of various large players, start-ups, and small and medium-sized enterprises. The **top 5 players** in the farm management software market held close to 15% of the market share in 2022 (Figure 11).

Figure 11. Farm Management Software Market (Precision Farming): Degree of Competition, 2022

DEGREE OF COMPETITION	FRAGMENTED
Total Market Share of Top Five Players	16%–24%
Trimble Inc. (US)	7–9%
Raven Industries (US)	5–7%
Topcon (US)	2–4%
Granular Inc., A Corteva Agriscience Company (US)	1–3%
AGRIVI (UK)	~1%

Further, developed economies such as the US, Germany, the UK, Japan, and Canada are expected to witness a relatively higher pain during the recession period as compared to developing countries like China, India, Mexico, Brazil, and Argentina. This is mainly due to the higher exposure of exported value for agricultural equipment and related software and services of developed economies as compared to emerging economies.

European players active in the market are further described in the following Table.

Table 4. European Players in the Farm Management Software Market

Company	Country	Description	Website
ABACO Spa	Italy	ABACO S.p.A. is a data company which uses data to gather insights into each client's business in real-time, empowering them to make strategic decisions and engage in data-driven business and operational tactics. Within the agribusiness sector, it offers business solutions such as sustainability, traceability, efficiency and productivity, agriculture fund management, development projects, and real estate management	https://www.abacogroup.com/en/home-page/
Agrivi	UK	AGRIVI is an agriculture technology startup company that designs and develops farm management software solutions for fruit & grain producers, food sourcing and processing companies, governments, and other stakeholders across the value chain. The company is a global farm management software provider that builds knowledge-based cloud solutions to help farmers take control over production, improve yield, and increase profit	https://www.agrivi.com/
Akva Group	Norway	AKVA Group ASA provides technology and services to the fish farming industry	https://www.akvagroup.com/
Connecterra B.V.	The Netherlands	Connecterra B.V. combines the power of sensor technologies and machine learning to provide a complete health monitoring service for the dairy industry. It develops a self-learning system designed to increase the productivity of farms. Its system offers multiple behavior detections and predictions including animal heat, estrus cycles, and health analysis, thereby enabling farmers to gain feedback and recommendations	https://www.connecterra.ai/
Cropio (acquired by Syngenta)	Switzerland	Cropio develops a SaaS-based platform that provides crop health management and vegetation control solutions to the agricultural sector. The company offers products such as Cropio, Agro, Telematics, and Mobile apps. The Cropio platform is an equipment-integrated, end-to-end software solution that provides imaging, recordkeeping, and equipment tracking	https://www.syngenta.com/en
DeLaval (Tetra Laval Group)	Sweden	DeLaval is a leading manufacturer of integrated milking solutions that help in improving farm productivity and ensuring animal welfare. The company offers advanced solutions for milking, farm and herd management, animal traffic control, feeding, cooling, and manure handling	https://corporate.delaval.com/
Ec2ce	Spain	ec2ce develops decision tools for agricultural applications. It gathers data from a variety of existing sources such as satellite indices and weather reports, and then uses sophisticated algorithms to provide customers with forecasts for everything from crop production to pest control	https://www.ec2ce.com/en/

Company	Country	Description	Website
Gamaya	Switzerland	Gamaya, a spin-off from the Swiss Federal Institute of Technology (EPFL), is engaged in capturing images of farmlands using hyperspectral cameras which can detect the spectrum of lands that human eyes cannot visualize. The company's farmland analytics solutions and risk management solutions improve production efficiency by facilitating optimum decision-making using artificial intelligence tools.	https://gamaya.com/en_us/

2 Conclusions

Farm management software plays a dynamic role in increasing farm efficiency. It is one of the solutions for farmers and growers to enhance their productivity, increase their crop yields, and remain competitive in the market. However, factors such as high initial capital investments and lack of technical acumen are acting as **restraints** for the farm management software market. Furthermore, the major **challenges** for the farm management software market are data management for effective decision-making, lack of standardization for managing agricultural data, and capital market challenges and consolidation risks. Many governments across the world are encouraging farmers and growers to adopt modern farm management techniques by increasing farming budgets, announcing different schemes, and conducting guidance sessions to improve farm efficiency. Also, the strengthening of intellectual property rights (IPR) over agricultural innovations is **driving** the farm management software market. This factor acts as a driver for the growth of the farm management software market as the software designers are encouraged to invest in the research & development (R&D) of farming software.

The **global farm management software market** is estimated to grow from USD 3,009 million in 2023 to USD 5,102 million by 2028 at a CAGR of 11.1% during the forecast period 2023 - 2028.

Farmers and agriculturalists are adopting farm management software and other IT services to meet the increasing demand for food and other agricultural products arising from the rapid increase in population. **Farm management software** improves farm productivity and optimizes and automates various farming processes. Moreover, it can be used for data management and security and for keeping a record of materials such as chemicals and crops used in farming and for inventory management, tracking, monitoring, and mapping applications. The data acquired with the help of sensors can be recorded and stored for analysis, assisting farm owners to make strategic decisions for maximizing profit. Farm management software allows farmers to remotely monitor multiple fields or multiple areas in a field simultaneously, reducing the hassle of traveling to various places in the field frequently. Analytics solutions can be used to generate **custom reports** for specific processes or equipment, enabling farm owners to take corrective actions and optimally allocate resources as per the requirement, facilitating cost reduction.

Some of the key players providing farm management software globally are Deere & Company (US), Trimble (US), Agrivi (UK), Agworld (Australia), Farmers Edge (Canada), and AG Leader Technology (US).

3 Sources

MarketsandMarkets Knowledge Store - Multisectoral database that collects market research reports in various technological fields and designed to process some information interactively. More than 1,200 market reports are published each year (<https://www.mnmks.com/>).

The information presented are contained in the report “*Farm Management Software Market – Global Forecast to 2028*”, published in February 2023.

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