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Global Smart Crop Scouting and Smart Spraying Market Report: Focus on Product, Application, Operational Analysis, and Country - Analysis Forecast Period, 2023-2028

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Abstracts

Global Smart Crop Scouting and Smart Spraying Industry Overview

The global smart crop scouting and smart spraying market was valued at $3.47 billion in 2022, which is expected to grow with a CAGR of 18.78% and reach $9.86 billion by 2028. This growth is primarily driven by the agricultural industry's growing emphasis on achieving higher crop yields while minimizing input costs. Smart crop scouting and smart spraying technologies offer precise and targeted approaches for pest and disease management, optimized nutrient application, and effective weed control. By enabling farmers to make data-driven decisions, enhance operational efficiency, reduce resource wastage, and mitigate environmental impact, these technologies are poised to fuel the expansion of the global smart crop scouting and smart spraying market in the coming years.

Market Introduction

Smart crop scouting and smart spraying are innovative agricultural practices that leverage advanced technologies to enhance crop management and protection. Smart crop scouting utilizes drones, sensors, and imaging systems to collect real-time data on crop health, pest presence, and field conditions, enabling precise decision-making for irrigation, fertilization, and pest control. On the other hand, smart spraying integrates sensors, AI, and data analytics to optimize pesticide application, considering factors like crop health, weather, and pest presence. These technologies minimize resource wastage, reduce environmental impact, and maximize crop yield, leading to more

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efficient and sustainable farming practices.

Impact

Technological Advancements: The continuous advancements in technology, such as artificial intelligence, the Internet of Things (IoT), and data analytics, are driving the development of more sophisticated and effective smart crop scouting and smart spraying solutions. As these technologies continue to evolve, they enable farmers to gather real-time data, make accurate predictions, and apply targeted treatments, thereby optimizing crop management and increasing overall productivity.

Increasing Need for Sustainable Agriculture: With growing concerns about environmental sustainability and the need to reduce chemical usage in agriculture, there is a rising demand for smart crop scouting and smart spraying solutions. These technologies offer precise and targeted approaches for pest and disease management, minimizing the need for excessive pesticide application. By promoting sustainable practices, smart crop scouting and smart spraying help to preserve the environment, protect beneficial organisms, and ensure safer food production.

Government Initiatives and Regulations: Governments worldwide are recognizing the potential of smart farming technologies to address food security challenges and promote sustainable agricultural practices. This has led to the implementation of supportive policies, financial incentives, and regulations that encourage the adoption of smart crop scouting and smart spraying solutions. These initiatives create a favorable market environment and provide farmers with the necessary resources and support to embrace these technologies.

Increasing Farm Consolidation and Labor Shortages: The consolidation of farms and the aging farming population have resulted in labor shortages in many regions. This has fuelled the demand for smart crop scouting and smart spraying technologies that can help optimize labor efficiency and reduce reliance on manual labor. By automating and streamlining various tasks, these technologies enable farmers to overcome labor challenges, improve operational efficiency, and maximize productivity.

Impact of COVID-19

The COVID-19 pandemic has had a mixed impact on the global smart crop scouting and smart spraying market, with disruptions in supply chains and labor availability. However, it has also accelerated the adoption of digital technologies in agriculture,

driving the demand for smart solutions for remote monitoring and precision farming practices.

Market Segmentation:

Segmentation 1: by Application

Scouting

Spraying

Crop Scouting Projected to Dominate the Market over the Forecast Period

The global smart crop scouting and smart spraying market was dominated by scouting, holding a significant 70% market share in 2022 and is projected to experience the highest growth rate. Smart crop scouting enables farmers to monitor crop health, detect diseases, and optimize resource utilization through real-time data and advanced technologies. It offers benefits such as targeted interventions, reduced environmental impact, and enhanced efficiency in farming operations. The integration of AI and ML further enhances its capabilities. With increasing adoption and recognition of its value, smart crop scouting is set to drive the future of agricultural practices globally.

The growing demand for smart crop scouting is driving the concurrent increase in demand for smart spraying solutions. Smart crop scouting provides farmers with valuable data and insights about their crops, including pest infestations, weed growth, and nutrient deficiencies. With this information in hand, farmers need efficient and targeted methods to address these issues and ensure optimal crop health.

Smart spraying technologies offer precise and targeted approaches to pest and disease management, nutrient application, and weed control. By leveraging advanced technologies such as drones, sensors, and artificial intelligence, smart spraying enables farmers to apply crop protection measures with accuracy and efficiency. This not only ensures effective control of pests and weeds but also minimizes the use of chemicals, reducing environmental impact and promoting sustainable farming practices.

The integration of data from smart crop scouting with smart spraying solutions allows farmers to make data-driven decisions and take proactive measures to address crop health issues. For example, if scouting identifies a localized pest infestation, smart

spraying systems can precisely target the affected area and apply the appropriate pesticides, minimizing chemical usage and reducing the risk of harm to beneficial organisms.

By combining the insights gained from smart crop scouting with the precision application capabilities of smart spraying, farmers can optimize their crop management practices. This leads to improved crop health, higher yields, reduced input costs, and minimized environmental impact. Therefore, the increasing demand for smart crop scouting directly drives the need for smart spraying, as both technologies work synergistically to provide farmers with a comprehensive and effective approach to crop management and protection.

Segmentation 2: by Scouting Product

Equipment

Software

Software Demand for Scouting will Grow with the Highest CAGR during the Forecast Period

Software plays a crucial role in smart crop scouting, enabling farmers to collect, analyze, and interpret field data for effective crop management. Software solutions for scouting are expected to grow at a CAGR of 19.86% over the next six years. These software tools leverage technologies like artificial intelligence and data analytics to provide real-time insights on crop health, pest and disease outbreaks, and nutrient deficiencies. They enable farmers to make timely and informed decisions, optimize resource allocation, and enhance overall productivity. The increasing adoption of smart farming practices and the need for precision agriculture are driving the demand for software in crop scouting, making it a key driver in the market.

Crop scouting equipment, including robots, drones, cameras, smartphones, and other handheld devices, is expected to witness significant growth in the coming years. As the agriculture industry embraces smart farming practices, the benefits offered by these advanced tools are growing. They enable farmers to gather precise and real-time data, enhance crop monitoring capabilities, and make informed decisions for pest management, nutrient optimization, and yield improvement. The increased adoption of equipment for crop scouting is driven by the need for improved efficiency, reduced labor

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requirements, and enhanced accuracy in data collection and analysis. Additionally, advancements in technology, such as the integration of artificial intelligence and machine learning, further enhance the capabilities of these tools, making them indispensable for modern agriculture. The expansion of the smart crop scouting market will continue to fuel the demand for advanced equipment, driving innovation and further improving the effectiveness of crop management practices.

Segmentation 3: Spraying by Product

Tractor Mounted and Self-Propelled Sprayers

Robotic Sprayers

Drone Sprayers

Among the various products used for smart spraying in agriculture, including tractor mounted and self-propelled sprayers, robotic sprayers, and drone sprayers, it is anticipated that drone sprayers will dominate the market over the forecast period. The increasing adoption of drone technology in agriculture is driven by its ability to provide precise and targeted spraying, efficient coverage of large areas, and reduced reliance on manual labor. Drone sprayers offer advantages such as enhanced maneuverability, accessibility to difficult terrains, and the ability to collect real-time data for improved decision-making. They enable farmers to optimize pesticide and nutrient application, reduce waste and environmental impact, and improve overall operational efficiency. Moreover, advancements in drone technology, such as improved flight stability, longer battery life, and integrated software solutions, further contribute to the growth of the market. As a result, drone sprayers are expected to witness significant demand and market dominance in the smart spraying segment, revolutionizing the way crops are protected and managed in modern agriculture.

Segmentation 4: by Region

North America - U.S., Canada, and Mexico

Europe - Germany, France, Italy, Spain, Netherlands, Belgium, Switzerland, and Rest-of-Europe

China

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U.K.

Asia-Pacific - Japan, India, South Korea, Australia and New Zealand, and Rest-of-Asia-Pacific

South America - Argentina, Brazil, and Rest-of-South America

Middle East and Africa - Israel, South Africa, Turkey, and Rest-of-Middle East and Africa

North America is projected to lead the global smart crop scouting and smart spraying market over the forecast period from 2023 to 2028. North America, comprising the U.S., Canada, and Mexico, holds a significant share of the market due to the presence of advanced agricultural practices, adoption of smart farming technologies, and strong focus on improving crop productivity. The region benefits from robust infrastructure, technological advancements, and supportive government initiatives promoting sustainable agriculture. Additionally, factors such as the availability of advanced machinery, precision farming techniques, and presence of key market players contribute to the growth of the smart crop scouting and smart spraying market in North America. The region's emphasis on optimizing crop yield, reducing environmental impact, and increasing operational efficiency through data-driven farming practices further strengthens its position in the market. With a favorable regulatory environment and the increasing adoption of smart agricultural solutions, North America is expected to maintain its market leadership in the global smart crop scouting and smart spraying segment.

Recent Developments in the Global Smart Crop Scouting and Smart Spraying Market

In April 2023, Bosch BASF Smart Farming and AGCO announced their collaboration to jointly develop and commercialize smart spraying capabilities. This partnership aims to integrate advanced technology into AGCO's Fendt Rogator sprayers and collaborate on the development of new features to enhance smart farming practices.

In March 2023, Bosch BASF Smart Farming launched a smart spraying solution that will be integrated into Dammann’s range of intelligent crop protection sprayers. It will be available initially in Germany and Hungary.

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In November 2022, Trimble Inc. partnered with xFarm Technologies. The partnership aimed at providing greater integration between their technologies and even smarter solutions for precision farming, such as smart spraying and smart crop scouting.

Demand – Drivers and Limitations

Market Demand Drivers: Global Smart Crop Scouting and Smart Spraying Market

Need for Higher Production at Limited Resources

With the increasing global population and limited availability of arable land, there is a growing need to maximize agricultural productivity. Smart crop scouting and smart spraying technologies enable farmers to optimize crop yield by providing real-time data on crop health, nutrient levels, and pest infestations. This allows for targeted and efficient use of resources, resulting in higher production.

Labor Shortage

The migration of the population toward urban areas has resulted in a shortage of labor for agricultural activities. Smart crop scouting and smart spraying technologies help mitigate this challenge by automating tasks such as crop monitoring, weed detection, and pest management. By reducing the dependence on manual labor, these technologies enable farmers to overcome labor shortages and improve operational efficiency.

Increased Focus on Sustainable Agriculture

There is a growing global focus on sustainable agricultural practices to minimize environmental impact and conserve resources. Smart crop scouting and smart spraying technologies support sustainable agriculture by enabling precise and targeted application of fertilizers, pesticides, and herbicides. This reduces chemical usage, minimizes environmental pollution, and promotes eco-friendly farming practices.

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Growing Demand for Organic and Non-GMO Crops

The consumer demand for organic and non-genetically modified organism (GMO) crops is on the rise. Smart crop scouting and smart spraying technologies play a crucial role in ensuring the quality and integrity of organic and non-GMO crops by enabling early detection of pests, diseases, and weed infestations. This facilitates timely intervention and supports the production of high-quality, pesticide-free crops to meet market demand.

Market Challenges: Global Smart Crop Scouting and Smart Spraying Market

High Initial Investment

Data Security-Related Concerns

Compatibility with Existing Equipment

Limited Availability of Skilled Labor

Market Opportunities:

Integral Offerings with Horizontal Integration in Farming

Climate Smart Agriculture

How Can This Report Add Value to an Organization?

Market Insight: The report on the global smart crop scouting and smart spraying market offers valuable insights into the industry landscape, market trends, and growth drivers. It provides a comprehensive understanding of the various smart spraying products, including tractor mounted and self-propelled sprayers, robotic sprayers, and drone sprayers. Additionally, it covers the scouting equipment used in the industry, such as drones, robots, and others. Moreover, the report discusses smart spraying applications, such as nutrient application and crop protection chemicals. This information allows organizations to gain a deeper understanding of market dynamics and identify potential opportunities for their products and applications.

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Product/Innovation Strategy: By highlighting the different smart spraying products and scouting equipment, the report enables organizations to assess the market demand and adoption of these technologies. It provides insights into the advancements and innovations in the industry, helping organizations align their product development strategies to meet market requirements. Furthermore, the report explores the diverse smart spraying applications, assisting organizations in identifying areas for product diversification and expansion.

Competitive Strategy: The report profiles major players in the smart crop scouting and smart spraying market, including manufacturers of spraying equipment and scouting technology providers. It assesses their competitive landscape, product portfolios, and strategies. Organizations can gain insights into their competitors' strengths and weaknesses, identify potential partnerships or collaborations, and position themselves effectively in the market.

Key Market Players and Competition Synopsis

The companies that are profiled have been selected based on inputs gathered from primary experts and analyzing company coverage, product portfolio, and market penetration.

The global smart crop scouting and smart spraying market exhibits a fragmented landscape, with numerous competitors vying to meet the diverse needs of the industry. In the smart crop scouting segment, the top six companies collectively hold a market share of around 30%, indicating a relatively dispersed market. Among them, John Deere stands out as the leader, showcasing its strong presence and market position.

On the other hand, the smart spraying market is characterized by fewer players, resulting in a more consolidated landscape. While the top 4 companies capture approximately 23% of the market share, led by DJI, the remaining market share of over 77% is distributed among a handful of other players. These players include prominent names such as XAG, EFT, Small Robot Company, FMC, Kubota, TeeJet, Topcon, and Trimble.

This fragmented landscape signifies the existence of multiple competitors who offer a range of solutions tailored to the specific requirements of the agricultural industry. Each company strives to differentiate itself through innovative technologies, customer-centric approaches, and strategic partnerships. This competitive environment fosters ongoing

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advancements and improvements in smart crop scouting and smart spraying solutions.

The diverse range of competitors in the market reflects the varied needs of farmers and agricultural stakeholders. The presence of numerous players encourages healthy competition, stimulates innovation, and provides farmers with a wider choice of solutions to optimize their crop scouting and spraying operations. As the industry continues to evolve, this fragmentation drives the continuous development and enhancement of technologies and services, ultimately benefiting the end users in their pursuit of improved productivity and sustainable agriculture practices.

Key Companies Profiled

Smart Crop Scouting

- Semios
- Bushel Inc
- Climate LLC
- BASF SE (xarvio)
- Cropin Technology Solutions Private Limited
- Corteva
- Syngenta
- Telus Agriculture & Consumer Goods
- Taranis

Smart Spraying

- AGCO Corporation
- Deere & Company

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WEED-IT

Precision AI Inc

HARDI

Agrifac Machinery B.V.

Ecorobotix SA

BA Pumps & Sprayers

Smart Crop Scouting and Smart Spraying

Trimble Inc

Greeneye Technology

Agridrones Solutions

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