INNOVATIVE APPLICATION OF DIGITAL MEDIA ART IN SMART AGRICULTURE: TAKING LUOHANGUO PLANTING IN GUANGXI AS AN EXAMPLE

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Abstract: This paper deeply discusses the innovative application of digital media art in smart agriculture. Taking Luohanguo planting in Guangxi as a specific case, it systematically analyzes the role of digital media art in improving agricultural production efficiency, optimizing resource allocation, promoting product marketing, strengthening agricultural education and cultural inheritance. By combining modern information technologies such as the Internet of Things, big data, and artificial intelligence, this article constructs a smart agriculture solution based on digital media art, aiming to promote the intelligence, precision, and efficiency of agricultural production. The research results show that the innovative application of digital media art in Guangxi Siraitia grosvenorii planting not only significantly improves the production efficiency and management level, but also promotes the inheritance and innovation of agricultural culture. The innovation proposed in this article lies in the deep integration of digital media art and smart agriculture, providing a new perspective and path for agricultural modernization.

Keywords: Smart agriculture; Digital Media Art; Guangxi Siraitia grosvenorii planting; Big data; Agricultural production efficiency

1 INTRODUCTION

1.1 Research Background and Significance

With the rapid development of technology, smart agriculture has gradually become an important direction for the development of modern agriculture. Smart agriculture has achieved intelligence, precision, and efficiency in agricultural production through the use of modern information technology, biotechnology, IoT technology, and other means. Digital media art, as a combination of technology and art, is increasingly being applied in the agricultural field with its unique visual experience and information dissemination methods. Integrating digital media art into smart agriculture can not only improve agricultural production efficiency, but also promote the inheritance and innovation of agricultural culture. Taking the cultivation of grosvenor grosvenorii in Guangxi as an example, this paper deeply discusses the innovative application of digital media art in smart agriculture, with a view to providing new ideas and methods for agricultural modernization.

1.2 Research Objectives and Issues

The purpose of this study is to explore the innovative application of digital media art in smart agriculture. Taking Luohanguo planting in Guangxi as an example, this study analyzes its role in improving agricultural production efficiency, optimizing resource allocation, promoting product marketing, and strengthening agricultural education and cultural inheritance. Meanwhile, this study will also explore the challenges faced by digital media art in agricultural applications and propose corresponding solutions.

1.3 Research Methods

This study adopts methods such as literature review, case analysis, and empirical research. Firstly, through literature review, the relevant theories and development status of smart agriculture and digital media art are sorted out; Secondly, taking Guangxi Siraitia grosvenorii planting as an example, this paper discusses the specific application of digital media art in smart agriculture through case analysis; Finally, based on empirical research results, summarize the effectiveness and shortcomings of digital media art in agricultural applications, and propose corresponding countermeasures and suggestions.

2 THE DEVELOPMENT OF SMART AGRICULTURE AND DIGITAL MEDIA ART

2.1 Development Process and Characteristics of Smart Agriculture

Smart agriculture is an important symbol of agricultural modernization, and its development process can be traced back to precision agriculture in the 1970s. With the continuous maturity of technologies such as the Internet of Things, big data, and artificial intelligence, smart agriculture has gradually achieved precise control and optimized management of

the entire agricultural production process. Smart agriculture has the following characteristics: firstly, data-driven approach, which collects and analyzes a large amount of agricultural data to provide scientific basis for agricultural production; Secondly, precision management is achieved through intelligent perception and control systems to achieve precision in agricultural production; The third is efficient collaboration, which improves agricultural production efficiency and quality through information sharing and resource integration[1].

2.2 Advantages of Applying Digital Media Art in Agriculture

Digital media art has significant advantages in the application of agriculture due to its unique visual experience and information dissemination methods. Firstly, digital media art can visually display the growth process of crops and various stages of agricultural production, providing farmers with intuitive learning materials; Secondly, digital media art can utilize modern information technology to achieve rapid dissemination and popularization of agricultural knowledge; Finally, digital media art can be combined with creative design to create agricultural brand images with local characteristics and enhance the market competitiveness of agricultural products[2,3].

3 Innovative Application of Digital Media Art in Guangxi Siraitia grosvenorii Planting

3.1 Growth Simulation and Decision Support System

In Guangxi Siraitia grosvenorii planting, digital media art is widely used in the construction of growth simulation and decision support system. Through digital image and animation technology, the growth environment, growth process and occurrence of diseases and pests of Siraitia grosvenorii are simulated to provide intuitive visual experience for growers. At the same time, combining big data and artificial intelligence technology, a decision support system is constructed to provide scientific planting suggestions and management strategies for growers based on real-time monitoring of environmental parameters and crop growth data. The application of this system not only improves the decision-making ability of farmers, but also reduces the risks and costs of agricultural production.

3.2 Virtual Farm Construction and Education Training

Using virtual reality (VR) and augmented reality (AR) technology, Guangxi Luohanguo Virtual Farm is created to provide farmers with an immersive learning experience. The virtual farm not only simulates the real planting environment and management process, but also incorporates interactive teaching elements, allowing farmers to conduct practical operation training in the virtual environment. This teaching mode not only reduces the risks and costs in practical operation, but also improves the practical operation ability of growers and their ability to deal with complex problems. In addition, online courses such as Siraitia grosvenorii planting technology and smart agriculture application are provided through online education platform, so that growers can learn at any time and anywhere and improve their professional knowledge and skills.

3.3 Brand Building and Marketing Strategies

Digital media art has played an important role in the brand building and marketing of Guangxi Siraitia grosvenorii. The unique charm and medicinal value of Siraitia grosvenorii are displayed by making exquisite promotional videos, pictures and web pages to attract consumers' attention and purchase. At the same time, social media and e-commerce platforms were used for online promotion and sales, which broadened the market channels of Siraitia grosvenorii. In addition, the brand awareness and market share of Siraitia grosvenorii will be further improved by holding online and offline brand promotion activities, such as agricultural product fairs, online live broadcast with goods, etc. In terms of marketing strategy, combining the visual impact of digital media art and modern marketing theory, formulate targeted marketing plans to improve the market competitiveness of Siraitia grosvenorii[4].

3.4 Cultural Inheritance and Innovative Development

The application of digital media art in Guangxi Siraitia grosvenorii planting is also reflected in cultural inheritance and innovative development. Record and display the planting history, cultural connotation and innovative application of siraitia grosvenorii in modern agricultural development through digital media art means, and promote the inheritance and innovation of agricultural culture. For example, film and television works such as historical documentaries and cultural propaganda films of Siraitia grosvenorii planting can be produced to show the unique charm and cultural heritage of Siraitia grosvenorii to the public; At the same time, the brand image and packaging design of Siraitia grosvenorii with local characteristics are created through creative design to enhance the added value and market competitiveness of products.

4 CASE ANALYSIS AND DATA SUPPORT

4.1 Case I: Intelligent Transformation of a Siraitia Grosvenorii Planting Base

Taking a Luohanguo planting base in Guangxi as an example, the base has achieved intelligent and accurate planting

management by introducing digital media art and smart agricultural technology. Deploy IoT sensors to monitor the temperature, humidity, light and other parameters of Siraitia grosvenorii growth environment in real time, and upload the data to the smart agriculture cloud platform. Researchers use the visualization techniques of digital media art to transform data into intuitive images and animations, providing farmers with scientific planting advice and management strategies. At the same time, the yield and quality of siraitia grosvenorii were improved through precision irrigation, precision fertilization, precision pest control and other precision agricultural operations. After intelligent transformation, the output of siraitia grosvenorii in the base has increased by 20%, and the quality has also been significantly improved.

4.2 Case II: Momordica Grosvenorii Brand Marketing and Promotion Activities

In terms of brand marketing and promotion, a Luohanguo enterprise in Guangxi has carried out a series of innovative activities by means of digital media art. The company has produced exquisite promotional videos and image materials, and promoted and sold them online through social media and e-commerce platforms. At the same time, the company also held multiple online live streaming sales events, inviting well-known anchors to promote and sell their products. In addition, the company also expands its brand influence through organizing agricultural product exhibitions and other activities. These activities not only improved the brand awareness and market share of Siraitia grosvenorii, but also promoted the development of local agricultural economy.

5 CHALLENGES AND COUNTERMEASURES OF DIGITAL MEDIA ART IN AGRICULTURE

5.1 Challenges Faced

Although the application of digital media art in agriculture has brought many benefits, it still faces some challenges. Firstly, the speed of technological updates is fast, making it difficult for farmers to keep up with the pace of technology. This requires farmers to constantly learn new technologies and knowledge, improve their technical level and application ability. Secondly, the application of digital media art technology requires a certain amount of cost investment, which may pose economic pressure for some growers. This requires the government and enterprises to increase their support and provide preferential policies such as technical support and financial subsidies[5].

5.2 Response Strategies

In response to the above challenges, this article proposes the following strategies: firstly, strengthen government guidance and policy support to promote the popularization and application of digital media art technology in the agricultural field; Secondly, carry out technical training and guidance services to enhance the technical level and application ability of farmers; The third is to explore ways and methods to reduce costs, such as sharing costs through cooperation and other means; The fourth is to strengthen scientific research and innovation, as well as technological research and development efforts, and promote the deep integration and development of digital media art technology and agricultural production[6].

6 RESEARCH CONCLUSION AND PROSPECT

6.1 Research Conclusion

Taking the cultivation of grosvenor grosvenorii in Guangxi as an example, this paper deeply discusses the innovative application of digital media art in smart agriculture. The research results indicate that digital media art plays a significant role in improving agricultural production efficiency, optimizing resource allocation, promoting product marketing, and strengthening agricultural education and cultural heritage. By combining modern information technologies such as the Internet of Things, big data, and artificial intelligence, digital media art provides new ideas and methods for the development of smart agriculture. Meanwhile, this article also points out the challenges faced by digital media art in agricultural applications and proposes corresponding solutions.

6.2 Research Prospects

In the future, with the continuous advancement of technology and the deepening development of digital media art, its application in the field of agriculture will become more extensive and profound. On the one hand, with the continuous maturity and improvement of technologies such as the Internet of Things, big data, and artificial intelligence, digital media art will be able to better integrate with these technologies, providing more accurate, efficient, and intelligent solutions for agricultural production; On the other hand, with the continuous improvement of consumers' requirements for the quality and brand of agricultural products, as well as the increasingly fierce competition in the agricultural market, the role of digital media art in shaping agricultural product brands and marketing will become more prominent. Therefore, the government, enterprises, and farmers should work together to strengthen policy guidance, technical training, and cost reduction to promote the wider application and development of digital media art in the agricultural field.

COMPETING INTERESTS

The authors have no relevant financial or non-financial interests to disclose.

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