

Integrating Regional Cultural Identity and Sustainability in Packaging Design for Chinese Geographical Indication Agricultural Products: A Case Study of Shatian Pomelo in Rongxian

Yulin Man^{1*}, and Yodkwan Sawatdee¹

Faculty of Decorative Arts, Silpakorn University, Thailand^{1*}

*Corresponding author, e-mail: yulinman775@gmail.com

Received: November 13th 2025; **Revised:** February 11th 2026; **Accepted:** April 7th 2026

Abstract

Against the backdrop of global sustainable consumption and agricultural product branding, packaging has become a crucial means of enhancing the added value of agricultural products with geographical indications. This study takes Rongxian Shatian pomelo as an example. The research goal is to explore feasible methods for sustainable packaging design that incorporates regional culture, aiming to improve the product's market competitiveness and cultural influence. Employing a combination of case studies, mixed research methods, and designed experiments, the study systematically synthesized and analyzed data from an analysis of internationally award-winning agricultural product packaging, along with questionnaire surveys and in-depth interviews with 200 consumers aged 25-35 and three Shatian pomelo growers. The study reveals that packaging integrating regional cultural narratives significantly boosts consumer recognition and repurchase intent, with 77.8% of respondents favoring aesthetically compelling, biodegradable options. Concurrently, growers emphasized packaging's essential role in conveying regional identity and product quality. Design experiments further confirmed that innovative packaging solutions based on bio-based materials can help reduce carbon emissions. This study suggests that current packaging for agricultural products with geographical indications in China still faces challenges such as monotonous structure, visual homogeneity, and insufficient environmental friendliness. The key to addressing these issues lies in addressing consumers' combined demands for aesthetics, ecology, and culture, while also meeting growers' expectations for increased added value and highlighting the unique characteristics of their region of origin. Therefore, packaging design innovation requires the systematic integration of three dimensions: materials, structure, and storytelling. Environmental protection can be achieved through the use of bio-based materials, material usage can be reduced through simple structures, and brand identity can be enhanced by incorporating regional cultural narratives. The synergistic integration of these three dimensions is the core path to building an effective and sustainable packaging system.

Keywords: Geographical Indication Agricultural Products, Sustainable Packaging Design, Rongxian Shatian Pomelo

Introduction

China's 2024 national policy, "Guiding Opinions on Accelerating the Comprehensive Green Transformation of Agricultural Development and Promoting Rural Ecological Revitalization," emphasizes promoting the comprehensive green transformation of agricultural development and promoting rural ecological revitalization. It also emphasizes increasing the supply of green, high-quality agricultural products and developing a green, low-carbon agricultural industry chain (Ministry of Agriculture and Rural Affairs, 2024). Vigorously promoting the development of national geographical indication agricultural product brands is the most effective means of promoting rural revitalization and accelerating agricultural modernization. Sustainable agricultural product packaging design plays a crucial role in establishing regional agricultural public brands and developing a green, low-carbon agricultural industry chain, contributing to consumer awareness and agricultural product brand positioning. Currently, agricultural product packaging design faces three significant challenges. First, functional design is incomplete. Some agricultural product packaging falls short in protecting the product, facilitating transportation, and warehousing. Second, environmental awareness is insufficient. Some agricultural product packaging focuses solely on basic functionality while ignoring the environmental impact of the materials used, often using environmentally unfriendly or non-biodegradable materials. Meanwhile, some agricultural product packaging, in an effort to attract attention, uses a variety of materials and complex processes, neglecting the pollution and resource waste that packaging causes to the natural environment during production, use, and disposal (Liu et al., 2023). Third, there is a lack of regional cultural characteristics. Many agricultural product packaging designs lack an exploration of regional culture and product characteristics. The packaging forms are monotonous, and visual design is highly homogenized, failing to highlight the unique value and cultural connotations of GI agricultural products.

The famous four pomelos in China include Rongxian Shatian pomelo whose history of growth is more than 2000 years and a common example of geographical indication agricultural products. The packaging that it has at present illustrates the predicament that most geographical indication agricultural products in China have: cheap cardboard boxes with plastic lids are affordable, but they do not portray the Chinese culture and do not take into account the environment, with the dual threats of cultural expression and future. Therefore, this study selects Shatian pomelo as a case study and employs theories such as narrative design, circular economy, and life cycle assessment. It integrates the concept of sustainable development into the packaging design of geographical indication agricultural products, explores specific design methods and strategies, and conducts theoretical verification. The goal is to shape the brand of GI agricultural products through sustainable

packaging design, thereby promoting agricultural product sales and promoting sustainable rural development.

Objectives

The primary goal of this research is to address existing issues in packaging design for agricultural products with national geographical indications in China. Specifically, it focuses on addressing issues such as environmentally unfriendly packaging materials, complex and energy-intensive packaging structures, monotonous and homogeneous packaging visuals, and a poor user experience. Through this research, we aim to achieve the following goals:

1. To use Rongxian Shatian pomelo as a case study example to examine its cultural peculiarities, physical properties and which packaging problems it has already.
2. To incorporating the concept of sustainable development, such as material used, the structural design, and visual expression, develop a packaging design solution of Shatian pomelo that involves the incorporation of regional cultural identity.
3. To confirm the environmental values and cultural communication efficiency of the solution by measuring life cycle and undergoing user testing of packaging solution.

Literature Review

The quality of agricultural products with geographical indications (GIs) is determined by their specific natural and cultural environments, resulting in unique economic and cultural value. In the context of modern consumer upgrades, agricultural product packaging has evolved beyond simple protection to encompass multiple functions, including product image, core value, and building consumer trust. Current research on GI agricultural product packaging design focuses primarily on the following aspects:

1. Communication of regional culture and identity.

The research mainly focuses on how to extract representative symbols from local natural landscapes, historical sites, folk art and dialects and apply them to packaging. Research on the extraction and application of local symbols, such as Hunan agricultural products with the connotation of "Silk Road Culture", can gain a foothold and develop in the fiercely competitive domestic and international agricultural product markets. This is mainly because they use unique regional cultural characteristics and scientific and reasonable product packaging to enhance the brand image and added value of Hunan agricultural products (Leng, 2023). In addition, taking the straw weaving craft of Xiangxi as an example, it is an excellent folk craft in itself. Applying straw weaving craft to the field of packaging design not only inherits the traditional straw weaving craft, but also obtains certain economic returns. It plays a triple role in spreading local farming culture, showing folk customs, building local agricultural product brands and increasing the added value of agricultural

products (Wang et al., 2020). Narrative design research emphasizes packaging as a carrier of local stories. The research explores how to construct a narrative experience about the history and customs of agricultural products through artistic illustrations, material touch, structural innovation and other means to establish an emotional connection with consumers. The narrative themes of packaging are established from three perspectives: brand story, regional characteristics, and history and culture. The narrative design of regional agricultural product packaging is explored from the perspectives of instinctive narrative, behavioral narrative, and reflective narrative. By applying narrative theory to the packaging design of geographically indicated agricultural products, the cultural connotation and aesthetic value of agricultural product packaging are enhanced, the packaging is given richer connotations, and homogenization is avoided (Li & Wang, 2024).

2. Anti-counterfeiting traceability and smart packaging.

The research focuses on effectively integrating physical anti-counterfeiting technologies such as agricultural product geographic information, variable QR codes, RFID chips, and special inks into packaging to ensure that the source of agricultural products can be traced, the process can be queried, and the responsibility can be investigated. By scanning the QR code or barcode set on the product packaging, users can quickly know the information of the product at each production link (Hong & Liu, 2025). Currently, there are two main types of smart packaging technologies suitable for application in food: one is functional material-based smart packaging, which mainly includes TTI smart labels, freshness indicator labels, and leakage indicator labels; the other is information-based smart packaging, which mainly includes RFID technology, QR code technology, NFC technology, and AR technology (Qu, 2023).

3. Brand value enhancement and emotional design.

Research on packaging as an important part of the brand's visual image, how to closely integrate it with the company's overall marketing strategy, improve brand image recognition through eye-catching appearance design, and establish a packaging image that is consistent with the corporate image (Li, 2024). Based on different consumer groups, consumption scenarios, and aesthetic needs, research on packaging design differentiation strategies, clarify product positioning, and meet the needs of different consumers (Zhou, 2018). This type of research focuses on how packaging sensory stimulation, opening methods, and scene integration affect consumers' emotional experience and purchasing desire (Wang, 2022).

4. Sustainability and ecological responsibility.

The study focuses on the feasibility, cost-effectiveness and consumer acceptance of the application of green packaging materials, recycled materials and reduced-volume design in packaging. Green packaging design must follow the principles of sustainable development, namely reducing the consumption of packaging materials, refilling packaging containers, recycling and reusing packaging materials, and decomposing packaging materials. However, how to integrate these basic

concepts into traditional product design and development to form a practical overall model of green packaging design is the key to the widespread acceptance and application of green packaging design (Li & Wang, 2023). Considering the entire life cycle, the study emphasizes the environmental impact assessment of the entire life cycle from the acquisition, production, transportation, use to waste recycling of packaging raw materials, and promotes the concept of circular economy design (Auras & Selke, 2022) (Figure 1). Exploration of regional environmentally friendly materials. The study explores the use of local renewable materials or biowaste to develop bio-based environmentally friendly packaging materials. The main material for the food packaging industry is bio-based polymers, and the structural characteristics, general processing technology, main limitations of these materials and current market conditions of bio-based polymers are emphasized. The focus is on exploring new technological approaches and possible solutions to improve the performance of bio-based packaging materials for commercial applications (Reichert et al., 2020).



Figure 1 Packaging carbon footprint

Source: Yulin Man (2025)

5. A Case Study of Rongxian Shatian Pomelo.

Being a Chinese national geographical indication product, the value of the research of the Rongxian Shatian Pomelo is much more than just a successful region of agricultural products. Its packaging, usually, a mix of the corrugated cardboard boxes and plastic bags, this can be seen as a reflection of the general dilemma many Chinese geographical indication products face in their quest to continue to be modern, they also need to deal with changes in production models with unusual and original ecological value, how to make the industrial upgrading demand meet the global agenda of sustainable development. Rongxian Shatian Pomelo was selected as a typical example as it is not only a living heritage that can offer a lot of cultural heritage but also a modern product under the crossovers of transformation and modernization; its packaging serves as one of the major points where one can observe the various issues of value conflicts.

In summary, we have found that recent research on packaging design for GI agricultural products has primarily focused on eight key areas: regional cultural expression, communication of GI identity, packaging anti-counterfeiting and traceability, intelligent packaging, packaging enhancing brand value, emotional design, packaging sustainability, and ecological responsibility (Figure 2). In particular, packaging sustainability and regional cultural expression have become key research areas. While breakthroughs have been made in packaging material innovation and circular economy models, research in this area still faces shortcomings. These are primarily manifested in the following five areas: insufficient research on the synergy between regional culture and ecological responsibility, and a relatively weak modern interpretation of cultural symbols. The conflict between full-lifecycle functionality and environmental sustainability remains unresolved. The implementation of circular economy models in decentralized agricultural systems presents certain obstacles. The integration of intelligent packaging and traceability technologies lags behind. Economical and large-scale production face technical bottlenecks.

Therefore, when researching sustainable packaging design for geographically indicated agricultural products, we focused on regionality, ecology, and economics. Through interdisciplinary research encompassing materials science, cultural design, and agricultural economics, we explored sustainable packaging for geographically indicated agricultural products, taking the Rongxian Shatian pomelo as a case study, and moving from technical feasibility to industrial implementation.



Figure 2 Research Status of Agricultural Product Packaging Design

Source: Yulin Man (2025)

Conceptual Framework

This study constructs an integrated conceptual framework to guide the design and evaluation of sustainable packaging for Chinese geographical indication agricultural products (Figure 3).

The framework is grounded in the specific case of Rongxian Shatian pomelo, where its physical characteristics, cultural connotations, and market conditions serve as the fundamental constraints for design.

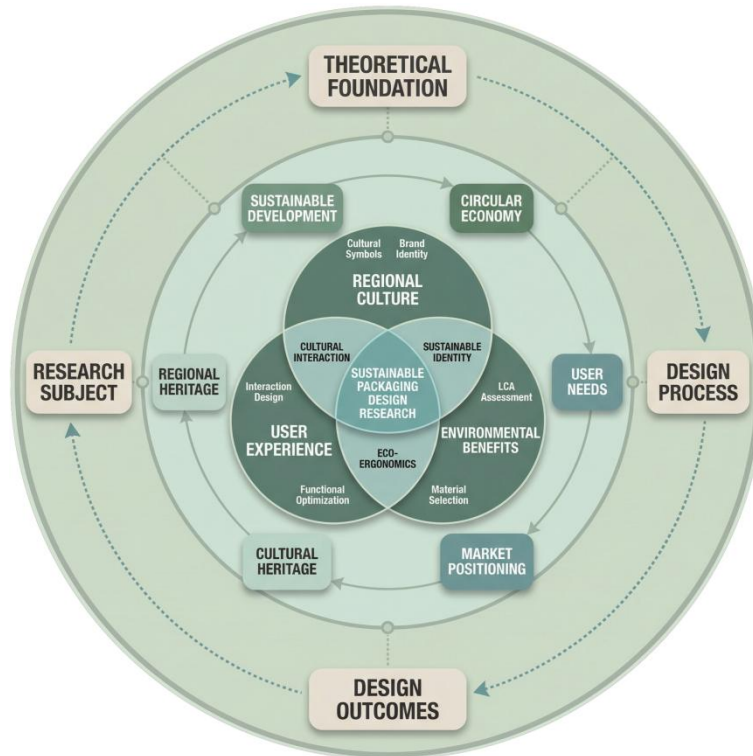


Figure 3 Research Conceptual Framework Diagram

Source: Yulin Man (2025)

The core of this framework lies in the organic integration of the unique value of geographical indication agricultural products with the systematic requirements of sustainable packaging. Specifically, packaging design aims to convey and protect the geographical uniqueness, quality reputation, and cultural value of geographical indication products. To achieve this goal, this study adopts a life cycle perspective to minimize environmental impacts across the entire process from raw material acquisition to waste recycling (Kakadellis & Harris, 2020). Simultaneously, it incorporates a stakeholder demands perspective to balance the needs of producers, consumers, distributors, and governments in terms of economic feasibility, market acceptance, cultural identity, and policy orientation.

Research Methodology

This study adopts a mixed research methodology, using Rongxian Shatian pomelo-a Chinese geographical indication product-as a case study, with the aim of designing its sustainable packaging solution. By integrating qualitative and quantitative data through iterative design practices and

scientific evaluation, the study ensures the final solution achieves environmental friendliness, functionality, and cultural adaptability.

1. General Strategy of Research Methods

The research framework primarily consists of three parts:

Literature and Case Studies: This research concentrates on the organization of theories, materials and policies on sustainable packaging design through the use of systematic literature reviews. Also, it undertakes a comprehensive study on award winning agricultural products packaging in the famous global packaging design competition, Pentawards giving it an overview of its vanguards in the fields of material innovation, structural design, and cultural communication. This provides the design standards and theoretical basis of the research.

Field Research and Stakeholder Analysis: The author also went to research the production area of Rongxian where he held in-depth interactions with the local production areas in agricultural and rural affairs bureaus, cultural broadcasting and tourism departments, enterprises, farmers, and scholars in semi-structured interviews and focus groups. This strategy gave a detailed overview of the state of the supply chain of Shatians pomelo, packaging issues, and demands and expectations of the different stakeholders.

Design Experiment and Life Cycle Assessment (LCA): Referring to the mentioned research results, a sustainable practice in the design of the packaging prototype was undertaken. The design was based on the priorities of reduced materials and sustainability, optimization of structures, and incorporation of local elements of cultures. Also, the design proposals were evaluated in terms of their carbon footprint with SimaPro software to give life cycle assessment results and compare the results to give objective data on the impact of the design on the environment.

2. Data Collection and Analyze

The data collection in this study encompasses both qualitative and quantitative dimensions:

Qualitative data: Primarily obtained through semi-structured interviews and focus group discussions, involving participants such as packaging designers, scholars, government officials, and corporate representatives, aiming to deeply explore professional insights and practical experiences.

Quantitative data: This was obtained through an online questionnaire targeting the specific consumer group (agricultural product consumers aged 25 - 35) to analyze quantitative indicators such as consumer preferences, awareness, and willingness to pay for sustainable packaging.

Sample Selection: The survey sample that was used was the questionnaire survey that comprised 200 consumers aged between 25 and 35 years who are users of e-commerce platforms selected through stratified random sampling. The age was selected due to their status as the primary purchasers of geographical indication agricultural products that hold a high level of education and are more environmentally conscious and value consumer experience more.

Three Shatian pomelo growers were used in in-depth interviews. The following criteria were used during the selection: 1) more than 10 years of cultivation history; 2) producing more than 50 tons each year; 3) they possessed their own brand.

Data Analysis: Semi-structured interviews were used to collect qualitative data, which were coded in terms of the topic analysis. The instruments of data collection and data analysis were a questionnaire survey and SPSS which provided descriptive statistics, correlation analysis, and the analysis of variance. The prototype design involved the use of SimaPro life cycle assessment software to determine the carbon footprint and the comparison of environmental impact of various material alternatives.

3. Design Development and Iteration Process

The design and optimization of packaging solutions follow a dynamic iterative process (Figure 4).

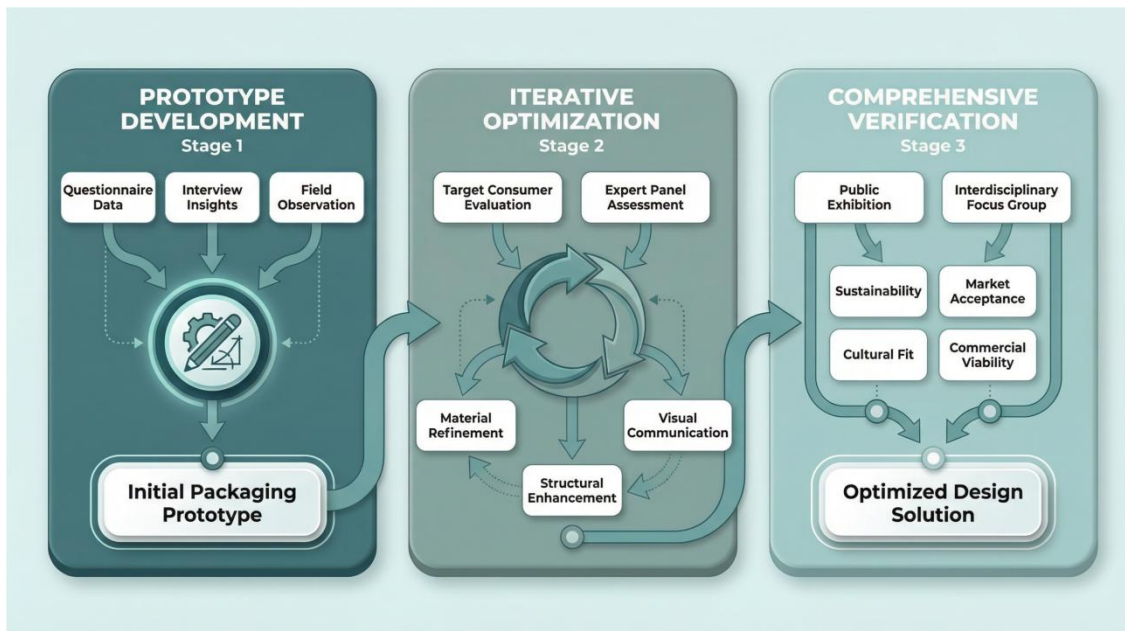


Figure 4 Research Phases

Source: Yulin Man (2025)

Prototype Development: Incorporate the information in the pre-development phase of the questionnaire, interviews, and observations in the field to develop and create the initial packaging prototypes.

Iterative Optimization: Waiting target consumers and multidisciplinary expert panels to take part in numerous rounds of prototype experiments. The packaging materials, structure, and visual communication are continuously corrected and ameliorated according to their usage feedback and suggestions of professional experts.

Extensive Checking: The optimized design model would be publicly exhibited to get greater public opinions and then cross-discipline focus group discussions would be carried out to give final review to the design that will ensure a balanced approach will be taken on sustainability, market acceptance, cultural compatibility and commercial feasibility.

Results

1. Consumer Demand Analysis

In this questionnaire survey (N=200), it was established that among target consumers, there is a very clear preference of sustainable packaging of geographical indication agricultural products. The statistics revealed that 89.7 percent of the participants would accept a 5 to 15 percent premium to cover the production of eco-friendly, well-designed sustainable packaging where the environmental and cultural characteristics are combined. When compared based on ranking attributes, the top three materials that are most significant are environmentally friendly (82.3%), regional cultural, and unboxing experience (71.5%). It is important to note that the social media sharing value of packaging was more sensitive among consumers between the age of 25 and 35. This shows that in the digital era, visuality and cultural story are major triggers to brand attention.

2. Sustainable Packaging Design Solution

On the grounds of the findings mentioned above, this paper came up with a sustainable packaging of Rongxian Shatian pomelo (Figure 5, Figure 6). The design entails the following aspects: As far as materials are concerned, we chose the history of using local waste of a plant, sugarcane bagasse as the base material, and composite materials rice, wood chips, and hemp. Its benefits include biodegradability, availability in the area, and low carbon footprint. The design of the packaging has been inspired by the existing local bronze drums, which have coverings of bronze that are unearthed and the lining is in the shape of honeycomb, used to cushion the package. Concerning cultural narrative, it is adorned with bronze drum patterns, and has QR code references to digital information about the history of the Shatian pomelo. The packaging will be packaged in one-fruit packaging, and will be used as a holiday present.

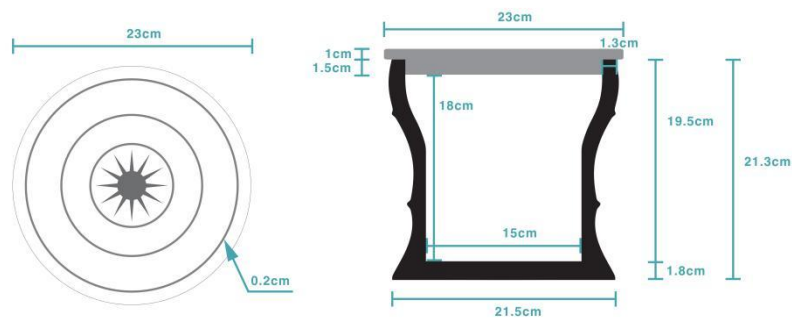


Figure 5 Bronze Drum-shaped Packaging Structure Diagram

Source: Yulin Man (2025)



Figure 6 Bio-based Pomelo Packaging Design and Honeycomb Shockproof Structure

Source: Yulin Man (2025)

3. Performance Evaluation

Standardized testing was performed to test the proposed package solution technically. A drop test that was taken at a height of 80 cm revealed that the new package cushioned the Shatin pomelo as a whole. The new packaging is entirely bio-based materials in as far as environmental performance is considered; thus it is cleaner compared to the former packaging that used plastic bags and plastic mesh bags which cannot be easily degraded. What the new packaging can also serve is reusing it as a storage place or reusing as a planter.

4. User Interaction and Specialist Appraisal.

The feedback concerning 15 target users in a controlled test showed statistically positive results in various dimensions (5-point Likert scale): Cultural Resonance Perception: 4.6/5, Environmental Impression Perception: 4.7/5, Unboxing Experience Evaluation: 4.3/5.

The tactile feedback and the reflectivity of the culture communication in the packaging design were the main aspects of the qualitative feedback. We have done so by forming an interdisciplinary team of experts (in the form of designers, material scientists and cultural scholars) that have provided an evaluation. The professionals ensured that the design was able to redefine the old cultural symbols and convert them into the modern design language without compromising environmental value.

Conclusion and Discussion

1. Conclusion

The research under the case of Rongxian Shatian pomelo investigated the viable direction of a sustainable packaging design of agricultural products with geographical indication. The general findings are as follows:

The cultural elements of bronze drum was effectively incorporated with the principles of sustainable design in the Shatian pomelo packaging, which indicates the compatibility of cultural identity and the ecological sustainability of the packaging design of the geographical indicator agricultural products.

The honeycomb structures combined with sugarcane bagasse composite materials performed better than the traditional packaging in terms of protective performances, and environmental advantage, which offered a model of similar geographical indication packaging.

Narrative design made a great contribution to the identification of consumers with regional culture, added value of agricultural products, and brand loyalty.

This research proves the hypothesis that the systematic combination of the regional culture, materials science, and design thinking is needed to make innovations in the geographical indication in the packaging of agricultural products. Incorporation of additional agricultural products into the study and possibility of sustainable packaging solutions in the context of different culture may serve wider scope in future studies.

2. Discussion

The research found a way of confirming the synergistic importance of cultural identity and sustainability in packaging design of geographical indication agricultural products. The Shatian pomelo case shows that packaging can be a bearer of the local culture, and not a one-reduction box, with the help of the modern interpretation of cultural signs. The use of bio-based materials not only leads to the lessening of the impact on the environment, but the natural texture of these materials makes people perceive the agricultural culture in a better way.

The points of interest that were innovative in this study include: 1) an innovative three-dimensional collaborative design system that incorporates culture, ecology and economy was proposed; 2) a copper drum shaped honeycomb bio-based packaging that was suitable to Shatian pomelos was developed, and 3) the efficiency of a narrative design that enhances cultural identity was verified. The findings offer fresh concepts on the sustainable packaging design and the promotion of other geographical indication agricultural products.

Nevertheless, there are some shortcomings of the study as well: the sample is predominantly urban and it does not exhaust the agricultural market; the long-term sustainability of the bio-based packaging requires additional experiments; and the economics of low quantity production remain to be streamlined.

Recommendations

Depending on the primary results derived in this research, we come up with the following recommendations to enhance the transfiguration of geographical indication (GI) agricultural product packaging into systematic sustainable design.

1. Suggestions to Producers: In GI agricultural product packaging, thinking should no longer be on short term costs but better concentrate on sustainable packaging as a fundamental part of longterm brand equity and differentiation strategy. Use local agricultural residues that include sugarcane bagasse and bio-based fibre like bamboo fibre at the first priority. It does not only help curtail the environmental footprint, but also fortifies the from farm to table origin story. We suggest taking the initiative to find partnership with those who have contributed to cultural research to find out and convert the local knowledge, history and traditional methods involved in the product behind the products so as to make packaging a carrier of cultural genes as opposed to a generic container.

2. Recommendations to Local Governments: It is advisable that sustainable packaging system of GI products be integrated into top structural design of rural revitalization and ecological civilization building. One of the main activities is the headship of the creation and execution of the guideline on the Sustainable Packaging of Geographical Indication of Agricultural Products, with the integration of the peculiarities of the local industry, which would give proper chances of production and creation. We can ease the early overheads and hazards of producers using material that is environment friendly or design that are new by instituting special subsidies or green credit. At the same time, the construction of agricultural packaging waste sorting and recycling and reprocessing infrastructure will be invested throughout the county and will physically support the circular economy.

3. Suggestions to the designers: Packaging designers should take the responsibility of the role of interdisciplinary designers and concept innovators. This involves the thorough fieldwork that would prevent the superficial and stereotypical use of the cultural symbols but to get to know the civilization behind the symbol appropriation. The designers require elementary learning in materials science, and aptitude to attain a fine equilibrium among the third-party narration, useful protection, cost management, and environmental operation. Finally, participative design must be implemented where various stakeholders like the producers, consumers, and members of the society are engaged in the design. This makes sustainable packaging solution culturally suitable, technically sound and marketable thus a real attainment of introducing the concept to implementation of viable solutions in sustainable packaging.

References

- Auras, R. A., & Selke, S. E. (2022). *Life Cycle of Sustainable Packaging: From Design to End-of-Life*. John Wiley & Sons.
- Hong, S., & Liu, M. (2025). Research on agricultural product packaging design based on the concept of quality traceability. *Art and Design (Theory)*, (4), 28 - 30. <https://doi.org/10.16824/j.cnki.issn10082832.2025.04.019>. (In Chinese)
- Kakadellis, S., & Harris, Z. M. (2020). Don't scrap the waste: The need for broader system boundaries in bioplastic food packaging life-cycle assessment—A critical review. *Journal of Cleaner Production*, 274, 122831. <https://doi.org/10.1016/j.jclepro.2020.122831>.
- Leng, Y. (2023). Packaging design path of agricultural products in Huxiang area based on Silk Road culture. *Packaging Engineering*, 44(8), 384 - 390. <https://doi.org/10.19554/j.cnki.1001-3563.2023.08.043>. (In Chinese)
- Li, H., & Wang, B. (2023). Green packaging materials design and efficient packaging with Internet of Things. *Sustainable Energy Technologies and Assessments*, 58, 103186. <https://doi.org/10.1016/j.seta.2023.103186>.
- Li, R. (2024). Research on packaging design based on brand image construction. *Packaging Engineering*, 45(6), 439 - 442. <https://doi.org/10.19554/j.cnki.1001-3563.2024.12.044>. (In Chinese)
- Li, X., & Wang, L. (2024). The narrative design analysis of regional agricultural product packaging. *Design*, (10), 134 - 137. <https://doi.org/10.20055/j.cnki.1003-0069.002186>. (In Chinese)
- Liu, W., Shi, M., Guo, Q., He, Y., & Liu, X. (2023). Healthy ecological design of agricultural product packaging under the strategy of rural revitalization. *Packaging Engineering*, 44(6), 241 - 257. <https://doi.org/10.19554/j.cnki.1001-3563.2023.06.026>. (In Chinese)
- Ministry of Agriculture and Rural Affairs. (2024). *Guiding opinions on accelerating the comprehensive green transformation of agricultural development and promoting rural ecological revitalization*. Chinese government website. https://www.gov.cn/zhengce/zhengceku/202412/content_6995343.htm (In Chinese)
- Qu, R. (2023). Agricultural product packaging design based on intelligent packaging technology. *Intelligent Printing*, (4), 37 - 43, 48. <https://doi.org/10.16004/j.cnki.pt.2023.04.008>. (In Chinese)
- Reichert, C. L., Bugnicourt, E., Coltelli, M.-B., Cinelli, P., Lazzeri, A., Canesi, I., Braca, F., Martínez, B. M., Alonso, R., Agostinis, L., Verstichel, S., Six, L., Mets, S. D., Gómez, E. C., Ißbrücker, C., Geerinck, R., Nettleton, D. F., Campos, I., Sauter, E., ... Schmid, M. (2020). Bio-Based Packaging: Materials, Modifications, Industrial Applications and Sustainability. *Polymers*, 12(7), 1558. <https://doi.org/10.3390/polym12071558>.

- Wang, P., Gan, D., & Qiu, Z. (2020). Research on straw weaving techniques and agricultural product packaging design in the La'er Mountain area of Xiangxi. *Journal of Nanjing University of the Arts (Fine Arts and Design Edition)*, (5), 197 - 199. (In Chinese)
- Wang, Y. (2022). Research on packaging design and application based on interactive experience. *Food & Machinery*, (2), 118 - 122. <https://doi.org/10.13652/j.issn.1003-5788.2022.02.020>. (In Chinese)
- Zhou, Z. (2018). People, place, pursue: Differentiation analysis of aesthetic strategy in packaging design. *Zhuangshi*, (2), 12 - 18. <https://doi.org/10.16272/j.cnki.cn11-1392/j.2018.02.004>. (In Chinese)