

CONTRIBUTING TO THE LOCAL CULTURAL LANDSCAPE: THE ELEMENTS AND VALUE OF TRADITIONAL FOOD PROCESSING LANDSCAPES IN YAMAGATA, JAPAN

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ABSTRACT

This study investigates the pickle-making cultural landscape in Yamagata Prefecture, Japan, focusing on its elements and value as a traditional food processing landscape. Through content analysis of historical materials and thematic analysis of 28 semi-structured interviews with farmers, residents, and business owners across 11 cities and towns, the research reveals the complex structure of this cultural landscape. Findings show that pickle-making landscapes consist of multi-level elements including physical spaces (cultivation areas, processing spaces, storage facilities), cultural factors (gender roles, family inheritance, ritual functions), and environmental adaptations. Local residents demonstrate strong emotional connections to pickle-making as a source of cultural identity and pride. The landscape exhibits relative resilience through social inheritance mechanisms, policy support, and adaptive practices, while facing vulnerabilities from urbanization, demographic changes, and industrialized food production. The research identifies a disconnect between architectural preservation and functional protection in heritage management approaches, highlighting the need for integrated conservation strategies. The study presents a foundational model depicting the relationships between landscape scenes, elements, and influencing factors, offering a framework for understanding and managing everyday food-related cultural landscapes in East Asia and beyond.

Keywords

Cultural Landscape, Foodscape, Pickle-Making, Qualitative Research Methods, Landscape Conservation

1 INTRODUCTION

1.1 Research Background

Cultural landscapes represent the combined works of nature and humankind, expressing a long and intimate relationship between people and their natural environment (UNESCO World Heritage Centre, 2025). According to UNESCO's definition, they demonstrate the evolution of human society, settlement, and land use over time. As defined in Item 5, Paragraph 1, Article 2 of Japan's Act on Protection of Cultural Properties, "Cultural Landscapes are formed by the climate of a given region and people's lives or work there, and are indispensable for understanding the livelihood and work of the Japanese people" (Agency for Cultural Affairs, 2025). These landscapes are vital repositories of environmental wisdom, cultural identity, and sustainable practices developed over centuries.

Traditional dietary cultures that were once essential to human life now face increasingly serious threats due to industrial restructuring and lifestyle evolution (Fontana et al., 2022). With accelerating urbanization, demographic changes, and lifestyle transformations, many local landscapes are experiencing significant changes (Sayer et al., 2013). The protection of disappearing traditional cultural landscapes has become a recurring topic at international scientific conferences and symposiums (Antrop, 2005). In this context, food-centered cultural landscape research provides an important perspective for understanding and protecting local traditional knowledge and practices (Graham et al., 2016).

Existing literature explores the value, changes, and impacts of food cultural landscapes from multiple perspectives. Santoro (2024) emphasizes the key role of traditional rural landscapes in climate change adaptation, rural economic development, and biodiversity conservation. Fontefrancesco and other scholars use "foodscape" as a framework for cultural landscape research, considering food landscapes as key tools for landscape management and protection (Fontefrancesco et al., 2023). Piras et al. (2023) found that supporting traditional agricultural practices in olive cultural landscapes is an effective strategy for protecting ecological ecotones and associated biodiversity. Bouchard-Perron (2017) confirms that consuming local native plants is interpreted as a form of integration into the local environment, while Quintus et al. (2019) found that fruit tree landscapes are closely related to cultural memory and spatial logic, contributing to the maintenance of identity. Furthermore, some scholars have focused on the landscapes created by specific processed agricultural products. For instance, Helphand's work on the landscape of hops details how a single crop can generate a unique cultural landscape encompassing not only cultivation but also specific processing facilities, labor sociology, and festivals, creating a handcrafted landscape (Helphand, 2014). Adopting this micro-level perspective on a processed food is academically significant, as it highlights the vernacular landscapes created by everyday, often household-based, food-processing activities that are crucial to cultural identity yet frequently overlooked in favor of large-scale agricultural heritage.

While significant attention has been given to prominent food-related cultural landscapes such as the Coffee Cultural Landscape of Colombia, the Tokaj Wine Region Historic Cultural Landscape, and the Agave Landscape and Ancient Industrial Facilities of Tequila, considerably less research has focused on everyday food processing practices that shape local landscapes, particularly in East Asia (Brumann & Gfeller, 2022). This gap is particularly notable considering the cultural significance of fermented and preserved foods in this region. Research on Asian traditional food processing landscapes is severely lacking, especially systematic research on food-related cultural landscapes in East Asia.

This study views food-related cultural landscapes, especially pickle-making, as important carriers of cultural heritage. The unique landscapes shaped by pickle production are distinguished from large-scale, relatively static agricultural landscapes such as terraced fields or vineyards. Unlike the latter, the pickle-making landscape is characterized by its micro-scale, its intimate integration with living spaces, and the dynamic processes that unfold seasonally. It is composed of a series of small-scale elements—vegetable patches, washing sinks, drying racks under eaves, and pickling barrels—that are woven into the domestic sphere of the home and yard. This creates a living landscape defined by a sequence of activities from cultivation and processing to consumption and storage, rather than by a single, monumental view. Pickle-making encompasses a series of dynamic and complete agricultural processing behaviors, from cultivating and harvesting vegetables to pickling, processing, consuming, and storing, rooted in various levels and scenes of the local landscape. The cultural landscape of pickle-making represents a significant

scholarly blind spot. Despite the global prevalence of pickling, its landscape dimension has been critically under-examined due to two prevailing biases: a bias towards the monumental, which underestimates the landscape-forming power of small-scale, domestic practices compared to large-scale agriculture; and a disciplinary bias towards the natural sciences, where quantifiable biochemical studies have overshadowed socio-spatial analysis. Consequently, the cultural and spatial narratives embedded in this everyday practice have been rendered invisible, a gap this study directly addresses.

This study focuses on pickle-making cultural landscapes in Yamagata Prefecture, Japan, where historical records trace pickling traditions back to the early 18th century. According to the Yamagata Fudoki, pickle-making traditions in this region date to 1704-1711, adopting salt-based pickling methods (Ajiki & Szasazawa, 1998). Historically, pickles were the only source of vegetables during the winter months in Yamagata, making them essential for survival. Today, while consumption patterns have evolved with modern preservation techniques, these traditional practices continue to influence local landscapes, architecture, and cultural identity. Yamagata Prefecture was selected as the case study area for multiple reasons. As a traditional agricultural region in Japan, it has a rich history of food preservation culture. Yamagata holds a special position in Japanese food culture, with its city, Tsuruoka, recognized as Japan's first designated UNESCO Creative City of Gastronomy (TSURUOKA Creative City of Gastronomy, 2025). The prefecture's unique climatic conditions and agricultural development history have provided a foundation for the development of traditional food preservation techniques.

Therefore, to address this research gap, this study provides a foundational examination of the pickle-making cultural landscape to reveal its constituent elements, values, and operational mechanisms, thereby offering a theoretical and practical framework for the conservation of overlooked, everyday foodscapes.

1.2 Research Objectives

To address the research gap, we investigate four core questions:

1. What are the elements influencing the formation of pickle-making cultural landscapes?
2. How do residents perceive pickle-making cultural landscapes? Is the local community aware of the landscape manifestations of traditional dietary culture?
3. Do pickle-making cultural landscapes possess resilience? How do these landscapes adapt and transform in the face of changes in modern society?
4. What contributions do pickle-making cultural landscapes make to local landscapes and community identity?

This research provides a foundational examination of pickle-making cultural landscapes in East Asia, offering valuable insights into the conservation and sustainable management of everyday cultural landscapes formed through traditional food processing activities.

2 METHODS

2.1 Research Approach and Study Area

This study is a qualitative work that adopts an approach of integrated analysis of multiple data sources. To achieve the research objectives, this study employs qualitative research methods, conducting extensive fieldwork and diverse data collection to foundationally explore the characteristics, evolution, and significance of pickle-making cultural landscapes in Yamagata Prefecture.

The study area, Yamagata Prefecture, is a traditional agricultural region located in the Tohoku region of northeastern Japan (Figure 1). It has an area of approximately 9,323 km² and a population of about 1.0 million. The prefecture is characterized by its unique climatic conditions; facing the Sea of Japan, it is one of the heaviest snowfall regions in the country. This climate historically made food preservation, particularly pickling, an essential practice for surviving the long, harsh winters. In terms of its agricultural development history, the Mogami River, which flows through the prefecture, played a crucial role as a transportation artery for essential pickle-making goods like salt, thereby shaping the region's distinct food culture.

Field investigations, situated within this distinct geographical and cultural context, were carried out across 11 cities and towns in Yamagata Prefecture, collecting data through 28 in-depth semi-structured interviews with various stakeholders, including vegetable farmers, pickle factory employees, restaurant chefs, distributors, residents, and tourists. Additionally, the study systematically analyzed historical documents such as folklore records, cultural histories, and prefectural agricultural archives.

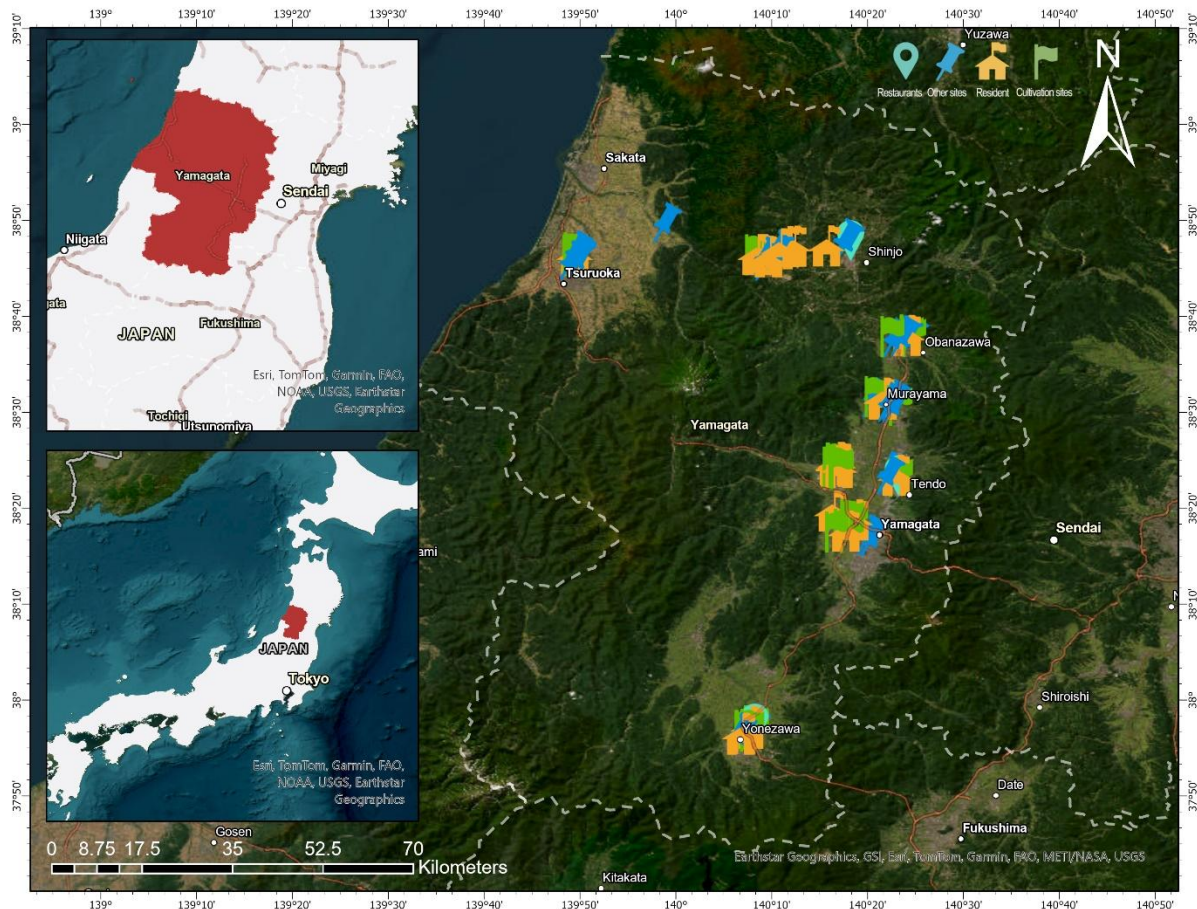


Figure 1. Study sites of traditional food processing landscapes in Yamagata Prefecture, Japan (2025). Map by the authors.

2.2 Collection and Analysis of Historical Materials

To elucidate the historical evolution of the cultural landscape and supplement contemporary interview data with information often inaccessible through internet searches or from living memory, this study undertook a content analysis of historical materials. This analysis revealed the characteristics, value, and importance of traditional food landscapes.

Given that this is an under-researched field with a novel research perspective, survey materials were sourced widely across disciplines, including ancient texts collected from antiquarian bookstores throughout Yamagata, independently published monthly magazines from various regions, and locally-focused historical collections gathered online. The analyzed materials are detailed in Table 1.

Table 1. Cultural landscape of pickle-making in Yamagata collected materials analysis list.

Title	Document type	Subtitle	Author	Publication Date	Publisher	Location	Printed By	ISBN
History of Yamagata Prefecture: Main Part 1; Agriculture Volume (Upper)	Book		Yamagata Prefecture	March 30, 1968	Oba Printing Co., Ltd.	2-7-20 Futatsuki-cho, Yamagata City, Yamagata Prefecture	Oba Printing Co., Ltd.	ND
History of Yamagata Prefecture: Main Part 2; Agriculture Volume (Middle)	Book		Yamagata Prefecture	March 28, 1969	Oba Printing Co., Ltd.	2-7-20 Futatsuki-cho, Yamagata City, Yamagata Prefecture	Oba Printing Co., Ltd.	ND
History of Yamagata Prefecture: Main Part 3; Agriculture Volume (Lower)	Book		Yamagata Prefecture	March 30, 1973	Oba Printing Co., Ltd.	2-7-20 Futatsuki-cho, Yamagata City, Yamagata Prefecture	Oba Printing Co., Ltd.	ND
Northern Vegetables Cultural History	Book	Chasing Hometown Vegetables	Takashi Aoba	December 20, 1976	Tohoku Publishing Planning	2-1-16 Honcho, Tsuruoka City, Yamagata Prefecture	Tsuruoka Printing Co., Ltd. & Fujisho Printing Co., Ltd.	ND
Japan's Dietary Life Encyclopedia: Hearing and Writing Yamagata Meals	Book		Encyclopedia of Japanese Food Culture - Yamagata Editorial Committee	October 25, 1988	Rural Culture Association Japan	7-6-1 Akasaka, Minato-ku, Tokyo	Toppan Printing Co., Ltd.	4-540-88044-6
Shonai's Life and Folk Tools	Periodical	Shonai's Life and Folk Tools	Kanji Inuduka	November 25, 1993	Chido Museum	10-18 Ienakamachi, Tsuruoka City, Yamagata Prefecture	Tsuruoka Printing Co., Ltd.	ND
Nature and Life Yamagata four seasons	Book		Yosuke Kurosawa, Masazo Igarashi, Takeshi Hirano, Kyoze Takamura, Teruhisa Sato, Susumu Saito, Akio Niizaki	October 1, 1996	Yamagata Shimbunsha	5-2 Hatagocho, Yamagata City, Yamagata Prefecture	Toppan Printing Co., Ltd. Tohoku Business Division	ND
Nostalgic Taste, Longed-for Taste: Yamagata's Local Foods	Book	Yamagata Local Foods	Yamagata Green Tourism Promotion Council	March 1999	Taifu Printing Co., Ltd.	1-2-6 Zao Matsugaoka, Yamagata City, Yamagata Prefecture	ND	ND
Enjoying Food Culture: Vesta Pickling Culture Special Issue	Magazine	Yamagata Prefecture's native vegetables and pickles food culture	Ajinomoto Food Culture Center, a public interest foundation	February 1, 2018	Ajinomoto Foundation for Dietary Culture	3-13-65 Takanawa, Minato-ku, Tokyo	ND	ND
Murayama Local Cuisine 100 Selections	Book	Food Memory Azudas 2 [Yamagata Food Culture Heritage]	Murayama Local Cuisine 100 Selections Editorial Committee	May 20, 2020	City Murayama Publishing Association	Murayama City, Yamagata Prefecture	ND	978-4-9906541-4-6
Complete Works: Passed Down Japanese Home Cooking - Pickles, Tsukudani, Name Miso	Book	Listening and Writing about Life from the End of Taisho to the Early Showa Period	Japan Society of Cookery Science	November 10, 2020	Rural Culture Association Japan	7-6-1 Akasaka, Minato-ku, Tokyo	Toppan Printing Co., Ltd.	978-4-540-19194-7
Sakata Folklore	Periodical	Food Situations in Shonai during the Edo Period	Junko Abe	May 31, 2021	Sakata Folklore Society	0234-24-3767 Honkawa 43, Masaki Onodera Residence Sakata City, Yamagata Prefecture	ND	ND

2.3 Interview Design and Implementation

Previous research indicates that qualitative studies can achieve data saturation through 9-17 small-scale interviews or 4-8 focus group discussions (Hennink & Kaiser, 2022). Based on this, the present study established a minimum sample size of 9-17 interviews. Field interviews were conducted from February 1-7, 2021, and November 1-19, 2022. Interviewees were categorized into four groups: Farmers, General Residents, Store Owners, and Restaurant Owners. All interviews were conducted in Japanese, the local language, to ensure accurate capture of cultural nuances. The audio recordings were manually transcribed by the authors into Japanese text documents for analysis, with findings translated into English only for results presentation. The list of interviewees and their geographical distribution are presented in Table 2.

The fieldwork was conducted in two distinct phases. Following a preliminary study in 2021, a more in-depth investigation was carried out in 2022 to test emerging hypotheses and gather richer data from a wider range of participants. To ensure consistency in the research process, all interviews were conducted individually by the first author. The interview items were systematically designed based on insights from the comprehensive literature review and preliminary findings from the analysis of historical documents. For instance, questions regarding transportation were specifically included to explore the historical influence of the Mogami River shipping route on the region's food culture and pickle production, a key theme identified in the historical context.

Table 2. List of interview sites.

Area	City/Town	Interviewees
Okitama Area	Yonezawa City	Farmer C, Resident F, Resident G, Resident H,
Murayama Area	Yamagata City	Store A, Store F, Store G, Farmer A, Resident D
	Sagae City	Store D, Store E, Restaurant A, Resident C
	Murayama City	Store H
	Tendo City	Store B, Store C, Farmer B, Resident B
	Obanazawa City	Store I, Resident E
	Oe Town	Resident A
Mogami Area	Shinjo city	Resident J, Resident K
	Tozawa Village	Resident L, Resident M
Shonai Area	Tsuruoka City	Store J, Store K, Resident I

2.4 Interview Themes and Content

The semi-structured interviews explored six themes: 1) Core Elements of Pickle-Making Landscapes: Questions examined six landscape spaces related to pickle-making: cultivation areas, sales venues, processing spaces, consumption places, storage spaces, and landscapes reflected in place names and special festivals. Participants were asked to identify landscape elements connecting these spaces. 2) Historical Evolution: Questions traced the vertical development of Yamagata pickles, from their introduction from China in 1904 to their establishment through agricultural experimentation and local adoption. 3) Transportation Influences: The study investigated how changing transportation systems affected pickle-making practices, with particular attention to the Mogami River's role in transporting salt, vegetables, and other necessities for pickle production. 4) Symbolic Elements: Participants identified symbols of pickle-making landscapes from both outsider (residents, tourists) and insider (producers, processors, vendors) perspectives. Follow-up questions explored whether these symbols were externally visible or only internally visible, and how they reflected landscape changes over time. 5) Vanishing Landscape Elements: The interviews identified traditional landscape features related to pickle-making that are disappearing in contemporary contexts. 6) Technical Processes: The study investigated the necessity and cultural significance of specific technical elements.

Each interview lasted approximately two hours and was recorded with participant consent, then transcribed for analysis.

2.5 Data Analysis Methods

The interview content was transcribed and analyzed using thematic analysis. Unlike deductive methods that use predetermined coding frameworks, this study adopted an inductive coding strategy, allowing themes and categories to naturally emerge from the data (Patton, 2014). First, by repeatedly reading the interview records, the researchers became familiar with the data content, forming an in-depth understanding of the overall interview material. Without preset categories, the interview content was analyzed line by line, identifying key concepts and descriptions related to pickle-making cultural landscapes. This process formed initial codes such as "production methods," "seasonality," "family connections," etc. (Table 3). As the coding work deepened, related codes were organized into higher-level

categories. For example, different emotional expression codes were integrated into the broader category of “attitudes toward pickle-making.” Finally, by analyzing relationships and patterns between codes, the research identified trends in pickle-making methods, changes in people’s ideologies, and connections between culture and space, extracting key themes such as “the role of family and community,” “the impact of modernization on traditional pickle-making,” and “the symbolic meaning of pickle spaces,” ultimately identifying the function of landscape constituent elements.

Coding work was conducted using NVivo 12 qualitative analysis software, facilitating the management of large amounts of textual data and visualization of coding results. To ensure coding quality, the research process regularly reviewed original data to ensure that codes accurately reflected the perspectives and experiences of interviewees.

This coding framework was not predetermined but was gradually developed and refined during the data analysis process, ensuring that the research findings genuinely reflected the perspectives and experiences of the local community, without being unduly influenced by the researcher’s preconceived notions.

Table 3. Example of interview text coding process.

Original text marked	Coding	Categories
It’s said that the beginning of various “omi-zuke” (pickled vegetables) started from the idea that it would be wasteful to throw away vegetables, and that they could be eaten if processed properly.	Manifestation of Traditional Wisdom	Significance of Pickle Making
So, considering this, the taste of these pickles—and there are many different types of pickles—naturally gets passed down through generations.	Generational Connection	Significance of Pickle Making
That’s probably why the flavors that have remained in our heads from the old days come back to us. When pickled vegetables appear once a day, it gives us a sense of reassurance.	Source of security	Significance of Pickle Making
In the old days, things were different. Now, processing facilities have been established. At these processing facilities, flavors are adjusted to suit the tastes of 100 people, so people can enjoy flavors according to their preferences. It seems that people have decided it’s better to leave it to the professionals. Honestly, it’s quite difficult. Making pickles is really challenging. If you’re not used to it, you don’t know how much seasoning to add.	Retail Accessibility	Factors affecting pickle-making cultural landscape
To produce in larger quantities, people form groups or cooperatives to make pickles together. Many of these people are fruit farmers who don’t have much work in winter. So, they make pickles as winter work and sell them to earn money.	Occupational connection to farming	Factors affecting pickle-making cultural landscape
In the past, there were times when the wives of local farmers would collectively make pickles in winter and sell them. But generally, as they’ve grown older, they’ve stopped doing this, and this practice has disappeared around here.	Population structure	Factors affecting pickle-making cultural landscape
Yes, as rice farmers age and become unable to work their fields, there’s an increase in places where weeds grow rampantly. Little by little, areas that used to be different from entire rice fields become unusable and overgrown with weeds. You could say that the landscape is changing from rice field scenery to weedy fields, and the traditional landscape is being lost.	Negative	Attitudes toward Cultural Landscape
Plastic became mainstream in the post-war Showa era, so around Showa 30 to 40 (approximately 1955-1965). From around that time, plastic began to be used widely because it doesn’t rot, lasts a long time, and is easy to clean. Now, plastic is the mainstream material, right?	Bucket	Tools and elements for pickle-making

2.6 Foundational Analysis and Model Construction

Through comparative analysis of landscape element classifications and functions derived from content analysis of historical materials and thematic analysis of interview transcripts, the study constructed a model of Yamagata Prefecture's pickle-making cultural landscape, clearly describing the roles and functions of various elements in the cultural landscape, providing a systematic framework for understanding this traditional cultural practice.

3 RESULTS

3.1 Content Analysis of Historical Materials

The analysis of historical materials reveals that the pickle-making cultural landscape of Yamagata Prefecture possesses multi-layered characteristics, showing that it originated from an adaptation to harsh geographical constraints, is deeply integrated with regional rituals and global food cultures, and has long been recognized for its value by local residents.

Through the analysis of historical materials, we found that the emergence of pickle-making cultural landscapes in Yamagata Prefecture was primarily shaped by geographical constraints. Prior to the enactment of the Snow Accumulation Act, pickled vegetables served as an essential food source during harsh winters, creating a remarkably stable and continuous landscape. This stability is exemplified in the "one soup, one side dish" (rice with pickled vegetables or fish) dietary pattern observed in Yamagata's Sakata region, reflecting generations of consistent cultural practice.

The pickle-making cultural landscape of Yamagata Prefecture demonstrates global cultural connections. The green vegetables used in Yamagata's pickles have created similar cultural landscapes across China, Japan, Vietnam, India, and other regions, representing a shared culinary heritage that transcends national boundaries while maintaining distinct regional characteristics in each location.

Historical documents reveal that Yamagata's pickle-making cultural landscapes are intimately connected to regional festivals and ritual practices. The "Shonai Historical Collection Volume 20" in the section "Dreams of the Past Throughout the Year" documents the pickle-making methods of samurai families in the Shonai region and their food customs during special festivals, demonstrating the integration of pickle-making into the broader socio-cultural fabric of the region.

Notably, Yamagata residents have long recognized the cultural landscape aspects of pickle-making. In Yamagata City, pickles made from green vegetables were considered indispensable winter foods, with the autumn scenes of harvesting, washing, and air-drying vegetables viewed as "charming sights of seasonal tradition," indicating an indigenous awareness of these practices as landscape-forming activities.

The elements of pickle-making cultural landscapes encompass multiple scenes including production, processing, consumption, and storage. Constant physical elements include vegetable cultivation fields, processing huts, drying spaces, and water sources. Evolving elements include production processes, vegetable varieties, and seed procurement channels. The pickling tools represent adaptive elements, evolving from traditional wooden barrels to plastic containers for convenience, while the antique wooden barrels continue to exist in the landscape as cultural heritage objects.

In summary, historical material analysis demonstrates that Yamagata Prefecture's pickle-making cultural landscapes possess remarkable historical continuity, global cultural connections, integration with ritual practices, indigenous recognition of landscape value, and a dynamic balance between constant and evolving elements.

3.2 Thematic Analysis of Interview Transcripts

3.2.1 Landscape Components: From Cultivation and Processing to Storage

Thematic analysis of the interviews revealed that the pickle-making cultural landscape is composed of a series of specific landscape elements: cultivation areas, processing and drying tools and spaces, and architecturally distinctive storage areas.

Through thematic analysis of interviews related to pickle-making in Yamagata Prefecture, this study identified several key themes. First, we identified the landscape elements that constitute pickle-making cultural landscapes. Cultivation patterns form the fundamental landscape elements, with the research

documenting various vegetables used for pickles, including mustard greens (*Brassica juncea*), cabbage, Chinese cabbage, cucumber, eggplant, and radish. Vegetable procurement channels were diverse, including self-cultivation, farmers' stores, and local markets, reflecting the complexity of the local food system. The cultivation methods of mustard greens and other vegetables reflect landscape adaptations to the local environment. Farmers rotate pickle vegetables with main economic crops in small-scale fields and equip greenhouses for winter production to adapt to Yamagata's cold climate. Growing areas are typically located near residential buildings, creating a distinctive interspersed pattern of agricultural and residential zones.

Processing tools constitute another significant visual element of the pickle-making cultural landscape. Bright yellow plastic containers are used throughout Yamagata Prefecture for vegetable pickling, typically placed near residences, serving as consistent visual markers of pickle-making activity in the region. Processing areas are usually situated in transitional zones between residences and fields, with dedicated outdoor spaces and small specialized buildings for fermentation. Washing and drying scenes vertically extend the landscape, with vegetables hanging from eaves and covered porches creating distinctive seasonal visual elements, while dedicated drying racks near residences further enhance the landscape's character.

Specialized storage spaces become the most architecturally significant elements in the cultural landscape. Traditional pickle storehouses, exemplified by the Meiji period (1868-1911) Tanaka family residence pickle storehouse in Yamagata City, feature distinctive architectural elements including stone foundations, wooden structures, and specialized ventilation systems. This represents one example of pickle-making cultural landscape elements that has been nominated and registered as tangible cultural property by the government, reflecting governmental awareness of the protection and management of pickle-making cultural landscapes.

3.2.2 Cultural Significance: Identity, Community and Ritual

The study also showed that pickle-making is not just about food production, but has a multidimensional cultural significance, as it is a source of cultural identity for the inhabitants and plays an important role in intergenerational links, communal interactions and even rituals.

Interview results indicate that residents generally hold positive attitudes toward pickle-making and its landscape significance, viewing it as an important component of family tradition and local identity. Many interviewees expressed strong emotional attachment to pickles and the pickle-making process, though the intensity of this attachment varied across different demographic groups. Residents unanimously recognized pickle-making as an important component of local cultural identity, expressing pride in unique local pickle varieties and emphasizing connections between pickle-making and family traditions. Visual and sensory experiences associated with pickle-making were frequently mentioned, including the comforting sight of barrels prepared for winter storage and the distinctive smell and texture of mustard green pickles unique to Yamagata. These embodied experiences contribute to residents' place attachment and a strong sense of community cohesion.

The importance of pickle-making in community interaction is evidenced by its integration into daily conversations. Interview records show that phrases like "Have you harvested radishes?" or "Have you pickled green vegetables?" function as common greetings among residents. As one interviewee described: "Every morning when I greet my neighbors, they ask 'What were you doing just now?' and I might say 'Have you pickled your radishes yet?' That's how we greet each other."

3.2.3 Factors Influencing Landscape Formation and Transformation

In addition, the formation and transformation of this cultural landscape was identified as being influenced by a variety of interrelated social and environmental factors, such as lifestyle change, gender, housing structure, transport, climate change and family connections.

Finally, regarding factors influencing cultural landscape development, the formation and evolution of Yamagata's pickle-making cultural landscapes are influenced by multiple interrelated factors. The coding structure for "Factors affecting pickle-making cultural landscape" in NVivo is shown in Figure 2. Temporal evolution and lifestyle changes emerge as central factors, with fast-paced work rhythms necessitating adjustments to traditional pickle-making methods. The tradition of communities processing pickle products

together during winter agricultural off-seasons to earn additional income has gradually disappeared. Distinct gender divisions exist in pickle-making practices, with women playing a dominant role and forming stable, enduring cultural inheritance groups. This gendered dimension has facilitated cultural crystallization and heritage transmission, while potentially limiting scale development due to the exclusion of half the potential workforce.

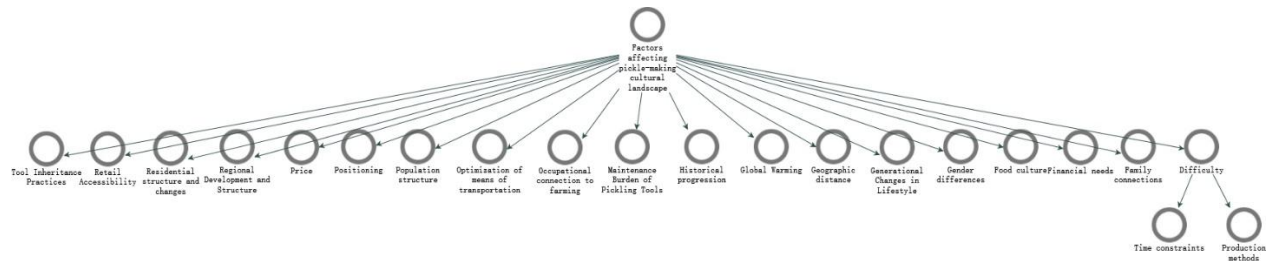


Figure 2. NVivo Visualization of Factors Influencing the Pickle-Making Cultural Landscape (2025). Diagram by the authors.

Changes in residential building structures have significantly impacted these landscapes. Interviewees noted that increased airtightness in modern housing has altered the traditional environment for pickle-making. As one respondent explained: “In the past, Japanese houses were built in such a way that wind could pass through from east to west. There were porches, corridors, windows, and storm doors on the east side, with ordinary windows on the other side. Although it was cold, this environment was better for pickles because they lasted longer.” The proliferation of modern apartment buildings has eliminated traditional drying and airing spaces and pickle jar storage areas, leading to the reduction and decreased visibility of pickle-making cultural landscapes.

Transportation developments and retail accessibility changes have transformed the acquisition and distribution of pickle materials. While historically dependent on local production systems, contemporary pickle-making increasingly incorporates ingredients and tools from broader geographic areas. Environmental factors, particularly climate change, were identified as challenging the seasonality and techniques of traditional pickle-making, with warming temperatures altering fermentation conditions and growing seasons.

Family ties and occupational connections to agriculture remain important factors in maintaining pickle-making traditions. Households with direct farming connections demonstrated stronger adherence to traditional practices and greater knowledge of landscape elements. The maintenance burden associated with pickling tools was identified as a significant factor influencing contemporary practice, with traditional wooden storage vessels requiring thorough cleaning and care after use, leading many residents to abandon traditional wooden barrels that had been used for generations (Figure 3).



Figure 3. Wooden barrels preserved in museums and wooden barrels still in use (2022). Photo by the authors.

The research found that pickle-making carries multidimensional cultural significance beyond its utilitarian functions. This practice facilitates generational connections, with tools, techniques, and taste preferences

transmitted within families. Many interviewees described using containers, recipes, or methods inherited from parents or grandparents, creating tangible links between past and present. Pickle-making establishes emotional connections with family, community, and region, serving as a repository of cultural memory and shared experience.

Several key concepts reflecting local food culture characteristics emerged consistently in the interviews. The term “self-sufficiency” appeared frequently, reflecting the self-reliant nature of traditional agricultural lifestyles in Yamagata Prefecture. Pickles were explicitly positioned as winter storage foods, highlighting their crucial role in addressing seasonal food scarcity. The concept of “self-production and self-consumption” emphasized the cycle of local production and consumption that characterized traditional food systems.

Beyond everyday contexts, pickle-making plays important roles in ritual and festival settings. In Obanazawa area, pickles feature prominently in funeral ceremonies. Interviews revealed that local funerals, influenced by Buddhist prohibitions on meat and fish, incorporate vegetable pickles as essential components of offerings and post-ritual meals (Yamaguchi, 2021). Local pickle processing factories provide specialized services for producing, delivering, and collecting pickle baskets for funerals. This integration with funeral rituals confers additional cultural significance to pickle-making cultural landscapes.

3.2.4 Challenges in Landscape Conservation: Divergence between Function and Form

Finally, the study highlights an important challenge in contemporary cultural heritage protection: the divergence between the protection of the architectural value of buildings and their original function (cultural practice) in the conservation of pickle-making cultural landscapes.

While structures like the Tanaka family residence pickle storehouse are designated as “Registered tangible cultural property,”(Figure 4) their functions as carriers of food processing activities and pickle jar storage often remain unrecognized in official management frameworks. Such buildings may even face risks of functional modifications due to their listed status, losing their original purpose of housing pickle barrels and becoming “dead” cultural landscape elements in the region. This disconnect between architectural preservation and cultural practice preservation reflects the ambiguous position of food cultural landscapes in heritage protection systems.



Figure 4. Tanaka family residence pickle storehouse (2022). Photo by the authors.

3.3 Comparative Analysis

Through comparing historical materials and interview transcripts, we discovered the development and changes in landscape constituent elements: for example, the transition from traditional wooden barrels to plastic containers, the shift from well water washing to tap water cleaning, the development from small-scale family production to partially commercialized production, and the change from self-sufficient

cultivation to multi-channel raw material procurement. Despite these changes reflecting technological and social progress, the core spatial sequence of pickle-making has remained relatively stable, demonstrating the continuity and adaptability of the cultural landscape.

Based on the above analysis, we identified the model of pickle-making cultural landscape (Figure 5), showing the complex relationship network among landscape scenes, landscape elements, and factors affecting the landscape. The model chronologically divides the pickle-making process into seven main scenes: cultivation scene, washing scene, air-drying scene, pickling scene, eating scene, storage scene, and special scenes (such as funerals and school education). Each scene contains specific landscape elements, such as labor landscape, sounds and smells, water sources, terraces, harbor views, and processing technologies. The right side presents various factors affecting these landscapes, including regional development structure, family connections, retail accessibility, price, transportation optimization, tool inheritance, and maintenance burden.

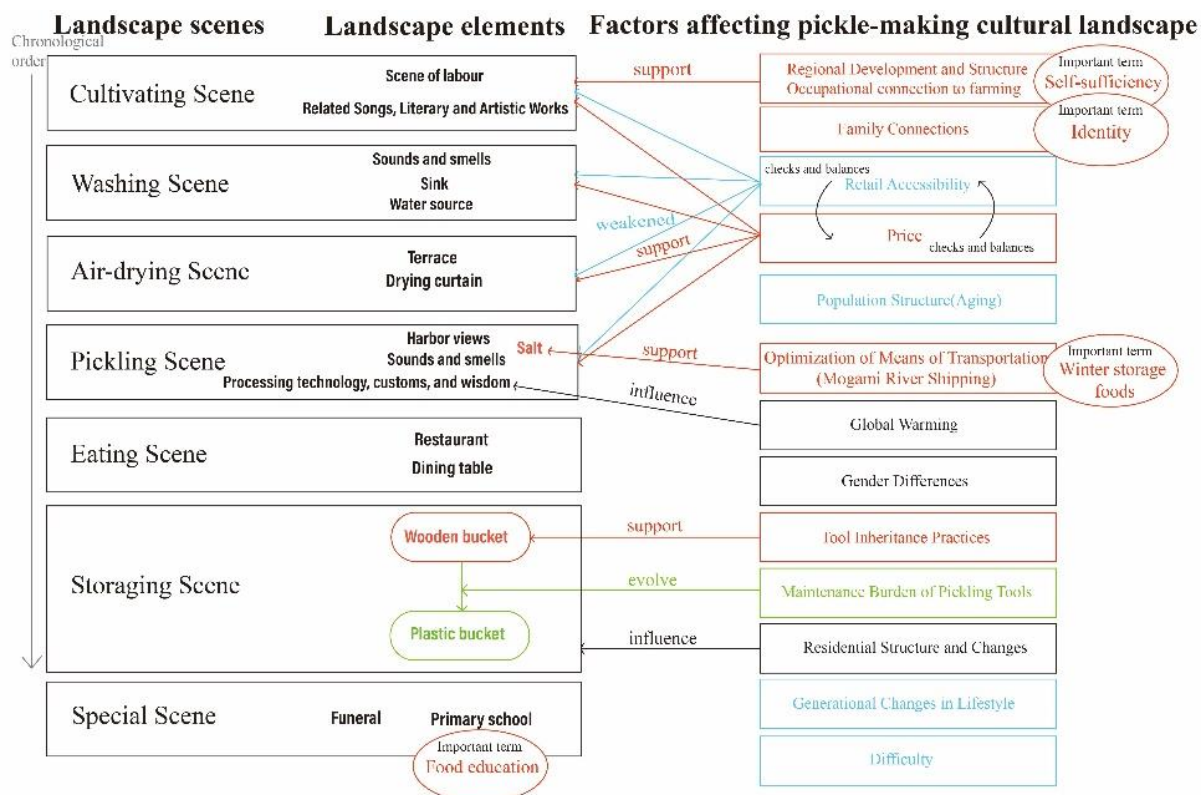


Figure 5. The model of pickle-making cultural landscape (2025). Diagram by the authors.

4 DISCUSSION AND CONCLUSION

Through the analysis of relevant historical materials and interview transcripts, this study conducted a systematic investigation of the cultural landscape of pickle-making in Yamagata Prefecture. This study demonstrates how the pickle-making cultural landscape is a vivid illustration of the definitions provided by both UNESCO and Japanese heritage legislation. The findings reveal a multi-layered system where “nature”—in the form of climate, terrain, and seasonal changes—and “humankind”—through cultivation, processing techniques, gender roles, family inheritance, and community rituals—are intricately combined. This dynamic interplay directly exemplifies UNESCO’s concept of a cultural landscape as the “combined works of nature and of man.” Furthermore, the landscape is shaped by the region’s harsh winters, and the residents’ efforts to adapt to them through pickling serve as a tangible record of local livelihood, thus embodying the definition in the Act on the Protection of Cultural Properties in Japan.

The research shows that residents generally hold positive attitudes toward pickle-making, viewing it as an important source of cultural identity and local pride. Moreover, as residents migrate, the landscape forms of pickle-making have also extended, with migrants bringing partial pickle-making customs into new environments, creating mixed landscape forms.

The research found that Yamagata Prefecture's pickle-making cultural landscape demonstrates relative resilience, with social inheritance mechanisms. In rural areas and agricultural families, technique inheritance remains stable through family internal practices and oral instruction, with elderly women playing a key role in this transmission. It has policy support, with local governments adopting measures such as designating pickle storehouses as tangible cultural properties, introducing pickle-making courses in schools, and organizing experience activities as protective measures. Additionally, pickle-making technology continues to innovate, and the pickle industry continuously transforms and upgrades, facilitating the creation of new economic value. However, modern housing lacks the space needed for traditional food processing, rural labor shortages due to younger generation migration and occupational changes interrupt technique inheritance and industrially produced pickle products reduce the necessity for home production, decreasing traditional production volume, reflecting the vulnerability of this landscape.

These findings both align with and extend existing research on foodscapes and cultural landscapes. While this study supports the framework proposed by Fontefrancesco et al. (2023) that foodscapes are key to landscape management, it offers a new perspective for foodscape research by moving beyond agricultural production to meticulously map the landscape of processing. By detailing the entire sequence from cultivation to consumption and ritual, this research demonstrates that the foodscape concept must also encompass the material culture, domestic spaces, and intangible knowledge associated with post-harvest activities. Similarly, this study complements the work of Piras et al. (2023) and Santoro (2024), which focuses on the ecological and economic values of traditional agriculture. Our findings pivot from the value of cultivation to the profound socio-cultural significance of processing, revealing how everyday practices contribute to identity, community cohesion, and generational knowledge transfer. In this way, this research provides a new lens for cultural landscape studies, emphasizing that non-monumental, domestic activities are as fundamental to landscape formation and heritage as large-scale agricultural systems.

This study is the first to reveal the constituent elements and operational mechanisms of pickle-making cultural landscapes in Yamagata Prefecture, Japan. It fills gaps in existing literature and provides new empirical cases for cultural landscape theory. We found that the cultural landscape of pickle-making has significant meaning for the local landscape, carrying cultural value across various levels of scenes. This landscape creates new landscape demands and visual characteristics with seasonal landscape changes, maintains local features, increases landscape diversity and recognizability, strengthens community connections, and maintains harmony between humans and nature.

The pickle-making cultural landscape model proposed by this study demonstrates how landscape constituent elements interact to form a landscape system. As illustrated in the study's model (Figure 5), this system is a dynamic network where "landscape scenes," their constituent "landscape elements," and a range of "factors affecting the landscape" interact and influence one another. This theoretical framework can be applied to other food-related cultural landscape research and helps relevant managers identify key protection points and potential threats to landscapes. Through appropriate protection strategies and innovative development, this cultural landscape is beneficial for maintaining the local landscape and can create cultural, social, and economic value for local communities.

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