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Original article

Traditional culture as an important power for maintaining agricultural landscapes in cultural heritage sites: A case study of the Hani terraces

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ABSTRACT

Rural landscape changes have attracted wide interest from related researchers. Economic factors driving land use changes in rural areas have been studied frequently. Up to now, however, the importance of culture in enhancing the resistance of landscapes to external shocks has not been given attention. In this paper, the key aim is to identify the importance of culture in maintaining agricultural landscapes through analyzing the employment of farmers and taking Hani rice terraces in Southwest China as a case. We employ a questionnaire survey method in this research. The results show that: most farmers in the Hani terraced areas are part-time farmers who are engaged in non-farm jobs in the cities near their hometowns during the slack farming season; Local non-farm work provides the convenience of returning home and avoids difficult employment in distant cities; most people plan to continue farming and support landscape conservation, but do not want the next generation to farm. We found that, in agricultural heritage sites, culture maintains the stability of traditional landscapes through its pull and resistance. The pull drives Hani people to stay in or near their hometown and to persist in farming in the terraces according to well-established land use ways. The resistance makes people hold on to stagnant thinking, poor scientific knowledge, etc. and not adapt to non-local society.

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1. Introduction

Rural landscape changes are a common feature in the process of the urbanization worldwide [1–3]. Rural areas in China have undergone dramatic changes since the 1970s, for example, farmland abandonment due to rising opportunity cost of rural labour and population outmigration, and agricultural lands being occupied by residential construction owing to changes of residential spatial structures [4,5]. Especially, in some remote mountainous areas across the world has emerged lots of abandoned farmland due to the very low returns from agricultural production [6]. For example, terrace abandonment in Mediterranean countries, Peru in South

America, China and Southeast Asia has been widely reported in the literature [6–15]. Ifugao terrace in the Philippines has been put on the list of endangered landscapes by the World Heritage Foundation because of terrace abandonment [14]. However, with their values recognized, terraced landscapes have been focused on and researched by scholars from around the world. The international conferences on terraced landscapes are a good demonstration for their importance¹.

The Hani rice terraces, located in Honghe Prefecture, Yunnan Province, southwest of China, are typical of agricultural systems in mountainous areas, and still keep integral terraced agricultural landscapes, and thus were designated as Globally Important

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¹ The international conference on terraced landscape had been held for two times. The First International Conference on Terraced Cultural Landscapes was held in Honghe, China, on 11–15, November, 2010. The second time took place in Peru, on 15–22, May, 2014. The third time will start in Veneto and Trento, Italy, on 13–22, October, 2016. The forth time will convene in Ifugao, Philippines in 2019.

Agricultural Heritage Systems (GIAHS) in 2009 by the Food and Agriculture Organization of the United Nations (FAO) and inscribed as World Cultural Heritage (WCH) sites by United Nations Educational, Scientific, and Cultural Organization (UNESCO) in 2013. While getting these world-class titles, these wonderful agricultural landscapes have been attracting the interest of many researchers.

There has been a lot of literature about the Hani rice terraces, for example, the examination of values of the Hani terraces [16], their conservation and tourism development [17–19], their eco-sustainable mechanisms including resilience to extreme climate [20,21] and local disease control of farmland ecosystems [22] and so on. Especially, why the Hani terraces can maintain their productive and ecological functions and socioeconomic stability after 1300 years has become a mystery that researchers want to uncover. Researchers from different disciplines have conducted studies around the topic of why it is still operating so effectively. Jiao et al. [23] researched the stability of Hani rice terraces systems from the perspective of landscape ecology and found that the rational utilization of forest cover and the scientific management of terraces created by the Hani people is the essential reason of ensuring terrace stability. It is because these traditional knowledge and management experiences are able to make the Hani terrace system provide local people with the clean and sufficient water for agricultural production and daily life. Conversely, these functions of the Hani terrace system also drive local people to strive to protect the terraced landscapes. Research by Wang et al. [24] shows the web made of streams and ditches is a key factor in maintaining stable yields from the terraces, which makes the water flow to every patch of terraced land from the forests covering the top of mountains. Cao et al. [25] comprehensively explained that the sustainability of the Hani terraces depends on their vertical landscape structures, scientific management system and the culture of ecological protection. Actually, under the context of urbanization, compared with those places where the landscapes have changed greatly, the Hani terraces fully show their advantages in landscape sustainability. However, the literature associated with Hani terrace social-economic sustainability was seldom found.

Culture formed in the process of interaction between human activities and native environment, meanwhile, impacts the environment and human society. Cultural activities and cultural identities are able to improve resilience of rural communities to resist external shocks [26,27]. There is little doubt, for the Hani terraced areas, that culture plays an important role in the maintenance of terraced landscape. Up to now, however, the importance of culture in enhancing resistance of the Hani communities to external shocks, particularly, urbanization has not been given attention.

As a land use form, the Hani terraced landscapes were protected and preserved effectively by mainly relying on the continuity of rice farming. Reinforcing rice field ridges, roads across fields and irrigation systems each year are the most important ways to maintain functional terraced landscapes. So employment changes of the farmers can impact directly on the system. Currently, the majority of farmers in China usually have to do part-time non-farm work during non-farming seasons or full-time non-farm work for high family expenses due to low agricultural incomes. Moreover, most migrants in central and west regions tend to go to developed cities in the Eastern region for higher wages [28]. Hani people, however, are very different in this aspect. They generally select part-time non-farm work near their home and go home frequently for traditional festivals, rituals, etc. Employment status of farmers is likely to be an important indicator that culture impacts on terraced landscapes. Therefore, the main aim of this paper is to present how the culture of Hani people contributes to the maintenance of the terraced landscapes, and to comprehend the mechanism by which culture improves the resilience of rural communities to cope with

external shocks through current employment characteristics and the rationales of local farmers.

2. Logic of the research and questionnaire design

2.1. Logic thought of the research

Researching the Hani terraces for more than five years, we found that the terraced landscapes did not show obvious changes when agricultural landscapes in other places in China changed rapidly, thus, we tried to explore the mystery according to the following logic structure (see Fig. 1).

From the issue why the Hani terraces were not almost abandoned, a series of questions are proposed: “are all the local farmers engaged in full-time farming?” If all of them just work on agriculture without other jobs, why do they do like that? Can they get higher incomes from the terrace agriculture than from other jobs? If they are sure, economic factors will be the most important impact factor for maintaining stability of the Hani terraces; If not, the culture will be the main factor, considering the fully peace political and social environment where people unrestricted migrate from one place to another in domestic. If a quite large part of them just take part-time farming, now then, the next several questions will be put forward. They are “where are they often engaged in non-farm work?”, “how many times do they go home a year?”, “how much do they usually get from the non-farm jobs?”, why do they the non-farm work at the place?, why do they go back in the frequency? Whether they can get more money from jobs at other places? Whether getting the highest income is the first aim of job selection for them? If yes, economic impacts will still be the main impact factor; if not, culture will be the most significant impact factor. This research will be conducted according to the logic.

2.2. Questionnaire design

According to Fig. 1, the questionnaire for peasant households was designed, which is comprised by two sections. The first section contains the sex, age, nationality and education of informants. The second section includes the current conditions of farmland, the incomes from farming and non-farming, the places of non-farm employment, the frequencies of returning home in a year, the reasons for returning home, the reasons for selecting current employment places, and the willingness whether to farm and hope the next generation to farm. The detailed questions in the second section of the questionnaire are seen in the Appendix 1.

3. Materials and methods

3.1. Study area

The study area, located in the southern section of Ailao Mountain, south bank of upstream area of Yuanjiang River, 22°49′~23°19′ N and 102°27′~103°13′ E (Fig. 2), is affiliated with Yuanyang County, Honghe Hani People and Yi People Autonomous Prefecture, Yunnan Province in southwest China. In this county, mountains constitute all the landform with the elevation between 144 m and 2939.6 m. The climate of this area is subtropical hilly monsoon climate with an obvious vertical change in temperature and precipitation, where the annual average temperature is 24 °C and the highest and the lowest temperatures are 44.1 °C and 3.7 °C, respectively. The annual average precipitation is 899.5 mm, and the highest and the lowest precipitations are 1189.1 mm and 665.7 mm, respectively. The soils are mainly comprised of yellow-red soil and red soil, with high water tightness [29]. These

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