

Excavating agrarian transformation under 'secure' crop booms: insights from the China-Myanmar borderland

Xiaobo Hua, Yasuyuki Kono & Le Zhang

To cite this article: Xiaobo Hua, Yasuyuki Kono & Le Zhang (2021): Excavating agrarian transformation under 'secure' crop booms: insights from the China-Myanmar borderland, The Journal of Peasant Studies, DOI: [10.1080/03066150.2021.1926993](https://doi.org/10.1080/03066150.2021.1926993)

To link to this article: <https://doi.org/10.1080/03066150.2021.1926993>



Published online: 02 Aug 2021.



Submit your article to this journal [↗](#)



View related articles [↗](#)



View Crossmark data [↗](#)



Excavating agrarian transformation under 'secure' crop booms: insights from the China-Myanmar borderland

Xiaobo Hua ^a, Yasuyuki Kono^b and Le Zhang^c

^aCollege of Humanities and Development Studies, China Agricultural University, Beijing, People's Republic of China; ^bCenter for Southeast Asian Studies, Kyoto University, Kyoto, Japan; ^cSchool of Geography and Environment, Jiangxi Normal University, Nanchang, People's Republic of China

ABSTRACT

This paper examines the transformation of agrarian livelihoods due to crop booms at the China-Myanmar borderland. A key finding is that local villagers have rented out their land to outside investors looking to make fruit boom investments. However, the villagers neither cultivated the same crops themselves, nor were they hired as wage laborers. Overall, this study finds that crop booms provide local villagers with opportunities to reallocate natural resources and adjust their livelihoods. We argue that the dynamics of agrarian livelihoods are co-produced as the result of transnational labor migration and state-led borderland repositioning under secure land tenure relations. This study contributes to the current discussion regarding the changes undergone by an agrarian society experiencing crop booms.

KEYWORDS

Crop boom; tenure security; agrarian transformation; agrarian differentiation; transnational labor migration; borderland

1. Introduction

With the farsighted suggestion from Hall (2011a), land grabs scholarship, especially in the Southeast Asian context, would benefit from engagement with the studies on crop booms, which could be seen as one 'entry point' for understanding agrarian and environmental transformation. Crop booms take place when an amount of land is rapidly converted to a given crop as a (near-)monoculture that spans multiple growing seasons. The crops are (mostly) for export as well as domestic markets¹ (Hall 2011a; Belton, van Asseldonk, and Bush 2017; Zinda and He 2020). It is therefore imperative to examine crop-related characteristics, production processes, involved actors and their practiced land control, networks, etc. (Hall 2011a; Schoenberger, Hall, and Vandergeest 2017).

In this context, this paper examines the transformation of agrarian livelihoods due to crop booms in China at the China-Myanmar borderland. This investigation is important for three major reasons. Firstly, institutionally, one key discussion focus related to crop booms is the (in)security of land tenure. A thought-provoking reflection on the secure-insecure split of land control relations has been presented by Hall (2011a, 839). Hall noted that 'secure' booms show that the basic tenure relations existed before crop booms, and

CONTACT Xiaobo Hua  huaxiaobo1988@gmail.com

¹Belton, van Asseldonk, and Bush (2017) critically reviewed the domestic demand driven booms, named 'domestic crop booms.'

pre-existing landholders' land rights continue to be respected. Instead, 'insecure' booms reflect that pre-boom relations are challenged, as various actors use 'powers of exclusion' to control land. Generally speaking, booms very often take place in areas with insecure property relations (Hall 2011a); these booms are often portrayed as having negative effects on local livelihoods and ecosystems (Nghiem, Kono, and Leisz 2020). Compared with the 'insecure' booms created by regulatory, market, forceful, and legitimating powers, remarkably little attention has been paid to 'secure' booms and the agrarian changes that follow.

This paper will address this issue in China, where a rural land tenure system and reform has already been largely discussed, especially since the establishment of the Household Responsibility System (HRS) in the 1980s (Zhou, Li, and Liu 2020; Ye 2015). Many important viewpoints exist that show the features of the 'secure' tenure relations supported by Hall (2011a). For example, according to the HRS, an individual rural household is granted land use rights, while land ownership belongs to rural collectives. Institutionally, rural land contracts are extensible, which could be seen to mean that land rights 'continue to be respected' (Hall 2011a). In addition, the Chinese government promotes land titling (granting certificates) and 'separating the three property rights'² (division of ownership, contractual and management rights). The government also encourages the development of land rental (or land transfer). In this context, farmers' land rental practices are encouraged and protected, and new producers that are allowed to use land for agricultural purposes 'are not able to take land by force' (Hall 2011a). Therefore, we argue that land tenure relations are, practically speaking, 'secure' in rural China (this will be discussed in a later section).

Secondly, geographically, China's rapidly increasing economical/political presence has in recent decades been tracked in studies on the contemporary dynamics of agrarian livelihoods in mainland Southeast Asia (Mills 2018). Borras et al. (2018) highlighted that crop booms happen outside as well as inside China and that investment flows from, within, and into China. However, knowledge of the recent crop booms inside China is very limited.

As Friis et al. (2019) pointed out, crop booms in mainland Southeast Asia 'are particularly pronounced in the borderlands between the countries where cash crops are largely grown (Laos, Cambodia, and Myanmar) and those countries' neighbors, where they are usually processed, consumed, or exported onwards (Thailand, Vietnam and China).' However, the agrarian changes that have made the borderlands a 'hotspot' for crop booms are not well understood, particularly as compared with the findings in current studies that focus on agrarian changes within a single country. In the Southeast Asian borderlands, crop booms are very complex, as large agribusiness companies (Barney 2012), small-scale investors or enterprises, and smallholders are involved (Zhang, Kono, and Kobayashi 2014, 2017; Friis and Nielsen 2016; Beban and Gorman 2017; Hua et al. 2019; Woods 2020). These crops mainly include large-scale agro-industrial crops (e.g. rubber and jatropha) and horticultural crops (e.g. commercially produced bananas) (Sturgeon 2013; Friis and Nielsen 2016; Hurni and Fox 2018; Kubo 2018; Rousseau 2018). In terms of tenure security, crop booms in the Southeast Asian borderlands are found in both 'secure' and 'insecure' tenure relations (Hall 2011a).

The argument from Friis et al. (2019) clearly shows the asymmetries between both sides along national borders (considering the border as a line dividing a region into

²Rural land use rights are further separated into contractual rights (*cheng bao quan*) and management rights (*jing ying quan*).

specific territories). Locally, however, the same boom crops, such as rubber and banana crops, are found on both sides of the China-Laos borderland, where (trans)national investments coexist to fulfill the Chinese market demand (Sturgeon 2013; Zhang, Kono, and Kobayashi 2014, 2015; Friis and Nielsen 2016). Therefore, we argue that a border is not only a division between growing and consuming boom crops; a border also creates a 'buffer', where agricultural production factors are supplied from both domestic and foreign sources. This convergence is supported via power relations, considering the comparative advantages in supply and contributing to the demand. In the post-Cold War dynamics, the role and purpose of borders and borderlands have changed and now combine safeguarding national sovereignty and facilitating exchange in the name of growth. Maintaining borders is becoming a generative process, responding to regional and global connections (Saxer, Alessandro, and Alexander 2018). Therefore, this study aims to integrate literature on border(land) studies with agrarian studies, highlighting the specific manifestations on borderlands.

Thirdly, relationally, many studies have reported the implications of crop booms for agrarian livelihoods (Belton, van Asseldonk, and Bush 2017; Vicol, Pritchard, and Htay 2018; Xu 2018; Nghiem, Kono, and Leisz 2020). Although many studies have interpreted how crop booms have caused the dynamics of smallholder livelihoods, land-uses, social relations, and political reactions 'from below' (Li 2011; Borrás and Franco 2013; Friis and Nielsen 2016; Kenney-lazar 2018a, 2018b; Xu 2019a), this study argues that existing literature may fail to adequately capture grounded agrarian changes. Here, two crucial points are highlighted.

To start with, as Hall, Hirsch, and Li (2011) noted, smallholders are at the heart of many crop booms. Most related studies demonstrate the direct involvement of smallholders, who cultivate boom crops themselves (or 'smallholder-driven crop booms') or who act as wage laborers, such as with commercial banana crops in the China-Laos borderland, maize in northern Myanmar, and coffee in northern Vietnam (Zhang, Kono, and Kobayashi 2014; Friis and Nielsen 2016; Nghiem, Kono, and Leisz 2020; Woods 2020). However, we argue that smallholders might not have to participate in crop booms themselves, based on our observations.

Following this, many studies have noted that large amounts of land in rural communities are controlled and accumulated by diverse and intertwined actors; this land is used to plant high-value-added boom crops. In reality, however, this is often only 'partly' done; the 'remaining' land might be used in the same way, or differently, as was previously the case. For instance, Friis and Nielsen (2016) noted that 'six households had paddy plots for rice production left, in addition to the land leased to the banana plantations.' In another case in northern Vietnam, Nghiem, Kono, and Leisz (2020) found that local smallholders used income generated from coffee booms to continue and mechanize rice paddy farming, which clearly showed the interaction between boom crops and traditional crops. Therefore, these studies might not fully capture the grounded agrarian changes caused by crop booms. We believe that exploring and scrutinizing the land control changes made for crop booms and the concomitant livelihoods adopted by local smallholders from livelihood perspectives could be an alternative approach.

Considering the aforementioned three research gaps, this study analyzes horticultural crop booms, changes in land control, and concomitant agrarian transformations in China

along the China-Myanmar borderland through in-depth fieldwork. We focus on the local processes related to agrarian transformation, including mobility, migration, and transnationalism. This study aims to: (1) understand how local villagers³ in the Chinese borderland respond to the structural dynamics and recent market-oriented processes (banana and watermelon⁴ booms) and (2) track and excavate the concomitant trajectory and transformations in agrarian livelihoods, as well as the manifestations of and the conditions for such agrarian transformations. To this end, a case study of a Dai ethnic village in Yunnan, in the China-Myanmar borderland, was completed.

The overarching argument is that crop booms provide the local villagers with opportunities to adjust, differentiate, and transform their livelihoods under market-oriented products and processes. In the case of horticultural crop booms in China's southwest borderland, local villagers only rent out land to outside investors, rather than cultivating the same boom crops, working as wage laborers, or being social-politically dispossessed or coerced as largely reported in existing literature. Instead, other new boom crops are adopted by local villagers. This is done by reallocating any 'remaining' land. In addition, local livelihoods are further diversified and differentiated. Three triggers are prominent contributors to contemporary agrarian transformation, including (1) secure land tenure systems providing both investors and villagers with incentives for variegated boom crops; (2) transnational labor flows in borderlands, showing that labor availability is still a key factor supporting crop booms and no longer a constraint for investors (mainly) and local villagers, and (3) emerging state-led repositioned borderlands, with potential for crop booms and off-farm opportunities.

These arguments are made in the following sections. The next section presents a reflection on the basis of emerging theoretical literature on crop booms, covering the key features of tenure security, the relevant impacts on agrarian societies, and situated borderland repositioning. Next, the paper introduces the local setting (including the on-going horticultural crop booms) and focuses on the Southeast Asian borderlands (particularly China and Southeast Asia) and study area, followed by the description of research methods. Finally, two main processes are particularly described, including (1) reaction to horticultural crop booms and (2) local transformations in agrarian livelihoods. The paper concludes with a detailed discussion regarding such agrarian transformations based on the case study. We believe these findings theoretically, empirically, and methodologically contribute to the existing body of literature on the changing agrarian livelihoods of smallholders and societies under conditions of crop booms.

2. Rethinking crop booms, tenure security, and agrarian changes in a repositioned borderland

This paper builds on the clarification and distinction of tenure security proposed by Hall (2011a).⁵ One key point is whether pre-boom land relations are challenged or respected

³In this paper, 'villager' and 'household' are used to describe socially differentiated rural residents (Xu 2018) and a social unit for analysis, respectively, which specifically suits China's conditions.

⁴This paper classifies watermelon as a tropical fruit (Yaacob and Subhadrabandhu 1995; Kubo 2018), although it is classified and sold as vegetable somewhere.

⁵'Secure' or 'insecure' is a relative concept. There have been many studies, mainly led by economists, that discuss land tenure (in)security in China. This shows the connections between land investment, technical efficiency, and tenure (in)security (Ma et al. 2013; Rao et al. 2016). However, this notion is largely conceptualized by a perceived approach. Another group of literature focuses on land expropriation or acquisition for 'public interest', which converts rural

during crop booms. Hall (2011a) maintained that insecurity ‘does not necessarily imply that tenure was insecure before the boom [...]; it does mean that, once the boom begins and the land values rise, these relations are thrown into question.’ As noted, given the significance of tenure security to crop booms, existing literature has focused heavily on ‘insecure’ booms; these studies feature ‘ambiguous or contested land tenure relations’ (Belton, van Asseldonk, and Bush 2017). In terms of agrarian changes under ‘insecure’ booms, negative consequences are often incurred for the agrarian environment and livelihoods, and these consequences have been widely addressed (Li 2011; Kenney-lazar 2018a, 2018b). In a secure boom, by contrast, the rights of local land users are respected, and ‘local landholders will be able to make their own decisions’ (Hall 2011a). Compared with the ‘insecure’ booms produced by different powers of exclusion, market power is the most obvious power that shapes land control during a ‘secure’ boom (Hall 2011a). This infers that a well-established land tenure system plays an important role in reducing land-related conflicts between outside investors and local smallholders.

This study contextualizes crop booms in rural China, where this study argues that land tenure relations are ‘secure’. As discussed, the Chinese government has institutionally implemented a series of policies, such as the HRS and land titling, to protect farmers’ rights. Notably, in order to maintain long-term stability in rural land relations, the Chinese government pursued a policy in November 2019⁶ whereby rural land contracts will be extended for another 30 years upon expiration of the second-round land contracting (starting from 1993 to 1997 and due to end from 2023 to 2027). In addition, new subjects (agents) of agriculture in China, such as family farms, are emerging with the feature of agrarian capitalization, and these have been promoted by the Chinese government (Yan and Chen 2015). Since the promotion of agricultural modernization began in 1997, land rental has been significantly encouraged in rural China. In fact, the 2013 *No. 1 Central Document of the Chinese Central Government* highlights the benefits of contracted farmland being transferred to specialized large holders, family farms and cooperatives (Ye 2015). This indicates that the rural land rental market and land readjustment will be further stimulated under the current institutional settings, based on the principle of the voluntariness of farmers. In this context, scholars have started to focus on the crop booms and agrarian changes. For example, Zhang, Kono, and Kobayashi (2014) detailed a case study in southwest China, where villagers rented out parts of their land to investors from other provinces for banana booms. Interactively and inclusively, local villagers learned agricultural techniques from investors and engaged rapidly in banana booms as land rental was encouraged and supported. Arguably, differential decision-making for banana booms among villagers has been examined; the decisions are largely affected by household wealth. Similarly, Xu (2020) highlighted that the dynamics of agrarian livelihoods caused by eucalyptus expansion are closely connected to certain institutional settings for land systems that protect villagers’ access to land, as well as the conditions of labor migration. Unlike the income inequity portrayed by Zhang, Kono, and Kobayashi (2014), Xu (2020) found that, during the eucalyptus booms, ‘some villagers were dispossessed or adversely affected, while a

collective-owned land into state-owned land (according to Land Management Law in China). This is reported together with the expropriation violence, especially in the context of urbanization (Sargeson 2013), which is beyond the scope of this paper. Instead, we adopt Hall’s (2011a) suggestion by focusing on how pre-existing land relations change during the crop booms.

⁶See more information at: The State Council of the People’s Republic of China (2019).

few may have benefitted and may even have dispossessed others.’ In addition, Yin, Qian, and Zhu (2019), and Zinda and He (2020) argued that maca and walnut booms in southwest China feature an unconventional process of a state-driven crop boom, considering the construction of an ecological civilization ‘without dispossession.’ This is distinctly different from cases reported in many other parts of the world. Generally, although the abovementioned cases in China were framed with different concerns, they all indicated that the diverse and contextually bound transformation of agrarian livelihoods due to crop booms should be thoroughly understood well beyond the discussion on tenure security.

Another point we need to revisit is the differentiation in agrarian livelihoods in contemporary rural China, which is largely different from the other cases in the Global South, where farming remains a major driver of growth. Many scholars have portrayed agrarian differentiation in the context of urbanization, rural industrialization, agrarian capitalism, and rural-urban labor migration in China (Jacka 2018; Zhang 2015). By focusing on ‘agrarian class’ by market situations (including land, labor, agricultural inputs and outputs markets), Zhang (2015) qualitatively identified five divergent class positions. This approach comprehensively considers both the means and the factors of production. However, this approach considers that the direction of the land market is only one-way; diverse and multidirectional land rental practices and control changes are not considered. In contrast, Xu (2019a) insightfully pointed out the villagers’ heterogeneous political reactions ‘from below’, focusing on land control dynamics. In addition, differentiated political reactions from villagers towards the expansion of industrial tree plantations are highlighted, based on the clarification of ‘active’ and ‘passive’ forms of inclusion and exclusion from political economy approaches (Xu 2019b). Different from Zhang (2015), which uses the household as the unit, these approaches are more concerned with the coexistence of different land control processes, and especially with examining individual responses. In addition, although the differentiated agrarian livelihoods could be portrayed by diverse typologies, the knowledge of how agrarian differentiation relates to diverse livelihood outcomes is still limited.

Considering the limitations cited above and in the ‘Introduction’ section, this study attempts to propose a nuanced approach to capturing agrarian changes. To achieve this, and despite the need for a separate analysis based on dynamic land controllers, a diverse and differentiated array of livelihood strategies across and within households (especially during crop booms) needs to be examined. Methodologically, this is achieved by revisiting the ‘theory of access’ and focusing on whether and how local villagers can derive benefits from the land. Specifically, we demarcate land into three types: villagers’ own land, in-rented land and out-rented land. One can generally distinguish simple reproduction and expanded reproduction in agriculture by considering ‘farm size’, as Yan and Chen (2015) claimed when examining the differentiation between rural producers. There are three advantages to be gained by adopting this method. First, this approach portrays social relations, diverse land rental practices, and land control changes in an attempt to consider both the social differentiation and the dynamics of farming families as a complementary combination or coexistence. Secondly, this approach indicates pluriactivity among local households. For example, if one household obtains income only by renting out all of the household’s land, this may imply a trend towards deagrarianization⁷

⁷Deagrarianization is defined as a process economic activity reorientation, occupational adjustment, and spatial realignment of human settlement away from agrarian patterns or agriculture-based livelihoods (Bryceson 1996; Hebinck 2018).

and relying on diversified off-farm opportunities. Instead, if a household obtains income from the household's own and in-rented land, this may show the important role agriculture plays in household livelihoods. Thirdly, this approach emphasizes the 'ability to benefit from' land, suggesting a mode of production and the degree to which livelihoods are tied to land. We do believe this approach contributes to a better understanding of crop booms and agrarian changes.

This paper situates crop booms and agrarian changes in the borderland between China and Southeast Asia. In borderlands, transnational dynamics are very powerful, and people engage in cross-border trade, work, and movement; they also share close ties with people in the neighboring state (Hall 2013;⁸ Hua et al. 2019). Temporary or permanent flows of people and capital in borderlands are very common and frequent (Zhang, Kono, and Kobayashi 2014; Friis and Nielsen 2016; Baird and Cansong 2017). In the context of economic globalization and regional integration (e.g. the Greater Mekong Sub-region Cooperation (GMS) and the China–ASEAN Free Trade Area), for example, the borderland between China and Southeast Asia has been repositioned and transformed to enable new relationships between nation-states, rather than being seen as a periphery within one nation-state. Now, this borderland is specifically characterized by regional markets and comparative advantages in terms of land, labor, and capital (Fox 2009). Along this borderland, the Yunnan Province in China has been repositioned as a strategic bridgehead by the Chinese government; the area has become a window for development and cooperation with Southeast and South Asia, with investment projects and infrastructure improvements (Su 2016). These improvements in infrastructure have also attracted more investment to the rural society.

To rethink the description of agrarian transformations, Byres (1977) claimed that, by becoming the agricultural production mode, such a transformation is a process that occurs in capitalism. However, this definition is included only for particular countries or bounded nation states, as highlighted by Beban and Gorman (2017). Inspired by interdependent developments between migration and agrarian changes (Kelly 2011), Beban and Gorman (2017) further insightfully emphasized the transnational dynamics in agrarian transformation in the Cambodia–Vietnam borderland, such as Vietnamese migrants crossing borders and leasing land in Cambodia for export-oriented production. In addition, domestic or transnational labor migration, linked to transformation of agrarian livelihoods and landscapes under the backdrop of global land investments, is a common feature in the Southeast Asian borderlands (Barney 2012; Baird and Fox 2015; Kelley et al. 2020). Therefore, this study will also identify the crucial transnational features and dynamics in the repositioned borderland between China and Southeast Asia in order to excavate grounded agrarian transformation.

3. Research context

3.1. *Prominent horticultural crop booms in the Southeast Asian borderlands*

In this section, we provide an overview that is useful for examining contemporary prominent horticultural crop booms in the Southeast Asian borderlands. In cultural ecology,

⁸Although 'frontier' can be used to mean many things, our intension is not to clarify terms such as 'frontier' and 'borderland'. Instead, in this study, these terms are, to some extent, interchangeable.

horticulture is defined as ‘small-scale agriculture involving the use of relatively small fields, plots, and gardens’ (Sutton and Anderson 2013). Horticultural crops are high investment crops that are produced by using resources intensively to obtain high-value products (Mingochi 1998). Horticultural crops are directly used by man for food, for medicinal purposes, or for aesthetic gratification.⁹ Typical crops include flowers, fruits, vegetables, and herbs. This paper mainly focuses on fruits. Fruit booms are not new in East and Southeast Asia. For example, some Chinese farmers rented paddy fields during the dry season in northern Laos for export to China in the early-2000s (Thongmanivong and Fujita 2006). However, this trend toward fruit investment has been expanding tremendously in the Southeast Asian borderlands in recent decades. In this, China is the major consumer, both producing and importing fruits (Zhang, Kono, and Kobayashi 2014; Friis and Nielsen 2016; Kubo 2018). Focusing on this issue, many scholars have explored several key reasons.

Firstly, dietary changes result in dramatic rural land-use transitions (Kastner et al. 2012). Over the past two decades, China has witnessed a significant transformation in food consumption; grain consumption per capita significantly decreased, while the consumption of fresh fruits, milk, dairy products and meat underwent a noteworthy and continuous increase (Huang 2017). This change in food consumption has driven Chinese agricultural dynamics, defined as a ‘hidden agricultural revolution’ (Huang 2016). Huang (2017) further defined this agricultural development transformation as a change from a traditional model dominated by administrative planning, to a contemporary model of high-value-added products via a neoliberal market. In terms of fruit booms, Southeast Asia plays an important role in meeting demand, due to its geographical proximity and unique (sub)tropical climate. Secondly, in addition to the dietary changes (as an exogenous driver), Zhang (2019) pointed out that the increasing prices for land rent and labor are also important drivers for structural changes in Chinese agricultural production. In this context, the Southeast Asian borderlands feature comparative advantages in terms of both land and labor, such as relatively low land rent and a sufficient labor force (transnational migration or local wage labor) (Zhang, Kono, and Kobayashi 2014; Friis and Nielsen 2016; Baird and Cansong 2017). Thirdly, Zhan, Zhang, and He (2018) highlighted the ‘flexibility’ of China’s overseas food strategy by tracing food trade. The study notes that this investment was ‘less driven by domestic food demand but is rather more oriented toward profit making.’ Fourthly, well-built infrastructure (e.g. roads) may attract and promote the flow of capital, people, and technology for fruit investment and trade (Kubo 2018; Kono et al. 2018), which encourages the connection between market and farming activities in the Southeast Asian borderland. One key feature of fruits is that they are putrescible; improved accessibility to markets could greatly reduce the barriers related to production and transportation. Although these reasons are framed from different perspectives, they contribute to the understanding of why the Southeast Asian borderland is becoming a frontier for fruit booms.

Under these circumstances, a basic question has been raised with regard to how to meet the increasing demand of the contemporary model in the context of a rapidly changing food consumption pattern. From a domestic Chinese viewpoint, the expansion of

⁹See the definition provided in the following website: <https://www.cropsreview.com/what-is-horticulture.html>, accessed 6 February 2020.

farmland areas for fruit production has been one of the responses to increasing demand. The statistical data show that the area covered by orchards increased from 8.65 million hectares in 1997, to 12.3 million hectares in 2019. The area of melon orchards specifically increased, from 1.3 million hectares in 1997, to 2.12 million hectares in 2018.¹⁰ However, it is difficult to understand fruit crop expansion by relying only on temporal data, because fruit plantations show a specific characteristic regarding ‘locality,’ such as specific climatic or soil and water conditions.

In a global/regional market, importing fruit crops from both adjacent and distant countries (considering that certain fresh fruits need to be quickly processed for sale and cannot be kept for a long time), or after crossing borders for the purposes of agricultural investment, is an effective means of responding to the increasing demand for fruit. From 2001 to 2015, China’s volume of imported fruits increased from 0.93 million tons to 4.49 million tons, with an average growth rate per annum of 11.9 percent. The turnover for imported fruits increased from 0.35 billion US dollars in 2001, to 5.87 billion US dollars in 2015, with an average growth rate per annum of 22.4 percent (Ministry of Agriculture 2016). The majority of imported fruits are bananas, cherries, dragon fruit, grapes, and durian. Tropical fruits are mainly imported from ASEAN countries including Vietnam, Thailand, the Philippines, and Myanmar (Beijing Orient Agribusiness Consultants Limited 2013; Ministry of Agriculture 2016). To give an example of a specific fruit crop, over 80 percent of off-season watermelons were imported from Myanmar in 2016.¹¹ Although some statistical data from Myanmar, Laos, Cambodia, and Brunei are missing in some databases (e.g. the UN Comtrade Database) (Zhuang and Zheng 2016), the important roles played by ASEAN countries in the fruit trade with China remains clear, particularly since the implementation of the China–ASEAN Free Trade Area (Mills 2018).

Among these imported fruits or other agricultural products, a portion is, in fact, produced through Chinese (trans)national agricultural investment; then, fruits such as bananas and watermelons are imported to the Chinese markets in northern Laos and Myanmar, bordering China (Zhang, Kono, and Kobayashi 2014; Friis and Nielsen 2016; Kubo 2018). However, agrarian changes resulting from fruit booms on both sides of this borderland seem quite different (e.g. banana boom in Xishuangbanna, China and Luang Namtha, Laos). This study provides a nuanced perspective of examining agrarian changes based on scrutinizing crops in the remaining land adopted by local villagers, as well as the consequent changes in agrarian livelihoods following fruit booms inside China.

3.2. Study area

Dehong Dai and Jingpo Autonomous Prefecture (hereinafter referred to as Dehong), located in the western part of Yunnan Province, China, is the setting for this study (Figure 1). Dehong is comprised of five counties or cities, including Mangshi City (Capital of Dehong), Ruili City (hereinafter referred to as Ruili), Lianghe County, Longchuan County, and Yingjiang County. Dehong shares a 503.8-km-long boundary line

¹⁰The related data can be accessed from the National Data source published by the National Bureau of Statistics of China, available at: <https://data.stats.gov.cn>, accessed 7 February 2021.

¹¹Available at: https://www.yndaily.com/html/2017/qiaotoubao_0209/106508.html, accessed 7 February 2021

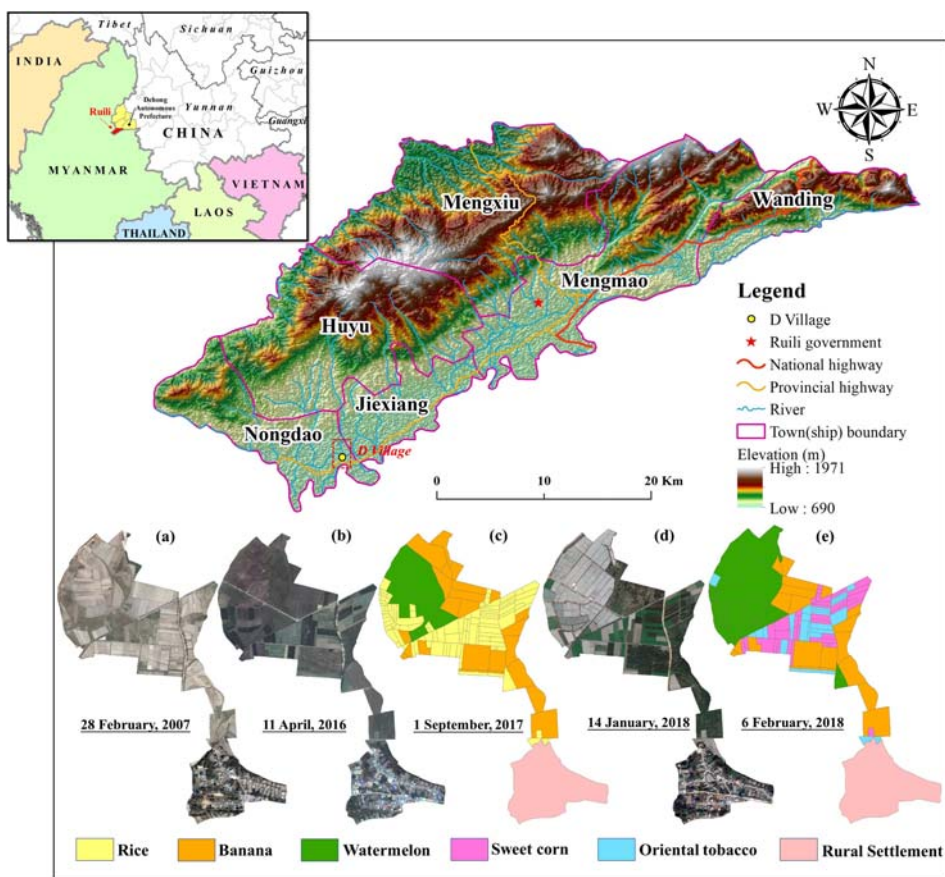


Figure 1. Location of study area and land use trajectories in the study village. Note: The upper background image was adopted from the ASTER Global DEM Version 2 dataset (30 m); The image (a), (b), and (d) were adopted from Google Earth; (c) and (e) showed the first- (May to October, 2017) and second-season (November, 2017 to April, 2018) crop patterns based on the first author's land plot survey during fieldwork; The current village head helped us draw the village boundary.

with Myanmar (bordering on Kachin State and Shan State, Myanmar) and covers an area of 11,526 km².

Ruili is located in the southwest part of Dehong, with an area of 1,020 km². Ruili is also a significant location with regard to border crossings and openness and has long been a key focal point linking China and Southeast Asia (Song, Chahine, and Sun 2020). The borderland of Ruili is connected with Myanmar, with long-established friendly relationships between the two, especially in terms of trade. Since the 1990s, the Chinese government has launched a series of policies to promote border integration and regional development (Summers 2012; Su 2016). The government repositioned Ruili as an opening-up frontier for the confluence of capital, people, items, and technologies by designating 'border economic cooperation zones' in 1992. In 2000, the 'inside the territory, while outside the customs zones' policy (*jing nei guan wai*)¹² was implemented in Ruili. The 'Ruili National Key Experimental Zone for Development and Operation' was established in 2012, and the 'Pilot Free Trade Zone in Yunnan' was created in 2019. Ruili has become

a place with opportunities for investment and employment, regional integration, and transnational linkages featuring rapid mobility and migration, and a confluence of capital, people, items, and technologies (Hua 2019). In 2017, Ruili's population was 208,550, of whom 58.6% were Han Chinese; 41.4% were national minorities, mostly Dai (60,818) and Jingpo (14,713). Ruili is characterized by two geomorphic types: an upland and a lowland region (Figure 1). Nongdao Town, located in the lowland region and with an area of 99 km², was chosen as the case study area. In 2017, the population of Nongdao Town was 14,146, of whom 15.3% were Han Chinese. The remaining 84.7% were ethnic minorities, mostly comprising Dai people (77.2%). One village that is very close to Shan State, Myanmar, was selected as the study site, and will be named D Village.

D Village is a typical lowland agricultural village, dominated by Dai people. The mean elevation in D Village is around 700 m. The traditional crops include (mostly) paddy rice, sugarcane, soybean and maize. In 2014, D Village had 83 households with 338 inhabitants and a per capita income of 7,575 RMB (RMB is the abbreviation for the Chinese currency, with 1 US dollar valued at approximately 6.64 RMB in 2016), mainly derived from crop farming and animal husbandry. This village presents a particularly marked example of fruit booms in the China–Myanmar borderland.

4. Intensive village study

In total, two waves of data collection were conducted in 2017 and 2018. The first data collection, through in-depth fieldwork, was conducted in D Village by the first author, from August to September 2017. The data collection included a household survey, key informant interviews, and a land-plot survey of the trajectory of crop patterns. The household survey itself employed a random sample of 72 households, representing over 85% of the total households (N=84) and included 324 individuals in D Village. During this survey, household heads were interviewed using a questionnaire. The contents of the questionnaire covered the following areas: (1) household livelihood profiles, (2) land-use practices, (3) livestock husbandry development, (4) labor arrangement and employment, and (5) changes in livelihood strategies. In terms of the key informant interviews during the fieldwork, the current and retired village heads were interviewed in depth regarding the rural transformations they had experienced, particularly agricultural development, banana plantation development and the socio-economic transformations in D Village. Regarding the aspect of land rental for fruit booms, the first author arranged a brief interview with some investors in watermelon cultivation from Zhejiang Province. In addition, combining high-resolution remote-sensing images from Google Earth and fieldwork, the first author conducted land plot surveys and explored the changing process of land use (the first-season crop pattern) of selected plots between 1982 and 2015, guided by the current village head. Then, from January to February 2018, as part of the second wave, the first author revisited D Village to observe the latest changes in land use (the second-season crop patterns) via a land plot survey. Questions relating to labor employment and the cash crop market were also asked.

¹²Qian and Tang (2019) noted that 'under this policy, Jiegao (a specific place in Ruili) is considered to be outside the jurisdiction of Chinese customs, and goods traded there enjoy exemption or export rebate.'

5. Results

5.1. Homogeneous agrarian society before fruit booms

The villagers in D Village persisted with single-season rice cropping for a long period of time (cf. [Figure 1\(a\)](#): fallow in winter, following a rice harvest and marketing). With the implementation of land consolidation projects supported by the local government in 2004 and 2010 in D Village (cf. [Figure 1\(a-b\)](#) for the new road to the northwest of the farmland), all paddy plots could be irrigated, and rural roads, especially those between villagers' houses and their fields, were newly-built with solid infrastructure, according to the key informant interviews. Generally, the well-built and renovated common infrastructure has greatly improved accessibility to farmland and irrigation systems. In addition, compared to the farmland used for rice farming and that close to the village settlement, the land quality and agricultural output of farmland in the north – largely used for commercial banana and watermelon in [Figure 1\(c-d\)](#) – was relatively poor in the past and had low productivity. This land was formerly used for sugarcane cultivation. Moreover, the water buffalo, with multifunctional value, is also an important income source for the livelihoods of ethnic villagers in southwest China (Rousseau and Sturgeon 2019).

The household surveys reveal that, prior to the fruit booms, nearly no farmland in D Village had been rented out to local households or to outside investors. This finding suggests that the local households cultivated only their own farmlands, or that their farmland was relatively sufficient for them to make a living. Before the early-2000s, engaging with off-farm working opportunities was not common among villagers.

5.2. Fruit booms: processes and consequences

In 2011, D Village became the subject of commercial banana investment. The investors mainly came from Sichuan and Hunan provinces. Based on the household surveys, over 80% of the sample households were found to have rented out all or part of their paddy fields to these investors, accounting for about 60% of the total farmland in D Village ([Figure 3](#)). These households signed a contract with the investors for six years, with the prices for renting land being 1,200 and 1,500 RMB/mu¹³ in 2011 and 2012, respectively ([Figure 3](#)). One important reason for these fixed and short-term contracts is that the banana harvest may not be good and may be very prone to disease if it is continuously planted for more than five or six years (i.e. continuous cropping obstacles). In 2011, local villagers mainly rented out the paddy fields located in the north of D Village, most of which were used for rice and sugarcane, owing to the low soil fertility ([Figure 1](#)). With the expansion from north to south, where the fertility of these paddy field plots was better than that of the former outward rented plots, the land rent was increased to 1,500 RMB/mu. In addition to the relatively high profit, one of the interviewed farmers mentioned one 'forced' reason for renting out his farmland to investors with ecological considerations:

After the introduction of commercial banana plantations, many households rented out paddy fields to businessmen. Since then, rice plantations near banana farms have been negatively

¹³1mu = 1/15 ha.



Figure 2. Banana and watermelon commercialized by outside investors in D Village. Source: Authors' survey. Notes: Photos (a) and (b) were taken in the same place on 1 September 2017, and 6 February 2018, respectively, which show the banana cultivation damaged by Panama disease and the measures taken by the investors. (c) shows the makeshift house nearby the banana farm for transnational labor migration from Myanmar. (d) presents the current conversion from banana to watermelon plantation, heavily relying on greenhouse and the mulching film, where the former is used for planting banana.

affected (such as damage caused by insects). Therefore, the households who planted rice had to rent out their paddy fields, because of the lower production.

Based on the observations in 2018 (the final year of the banana contract), most of the banana trees in D Village suffered from Panama disease (Figure 2). The investors thus tried to take measures to maintain production, but they failed (as observed and described by the village head). When the banana contract was finished in 2017/2018, the banana farm was eventually converted to areas of watermelon cultivation, and several land plots used for rice cultivation were replaced by watermelon farms. These farms were managed by investors from Zhejiang Province (Figure 3). According to the household surveys and the key informant interview, this conversion trend of the crop pattern was still ongoing at the time of the interview. Transnational labor migrants from Myanmar were hired as wage labor for banana and watermelon farms. Almost no local villagers work for fruit booms as wage laborers. These Burmese laborers were mostly registered and were granted long-term stay in China. As one watermelon investor commented:

Since 2017, there were a total of five businessmen like me who invested in watermelon. We contacted the village head and then signed the deal for watermelon for two years and gave

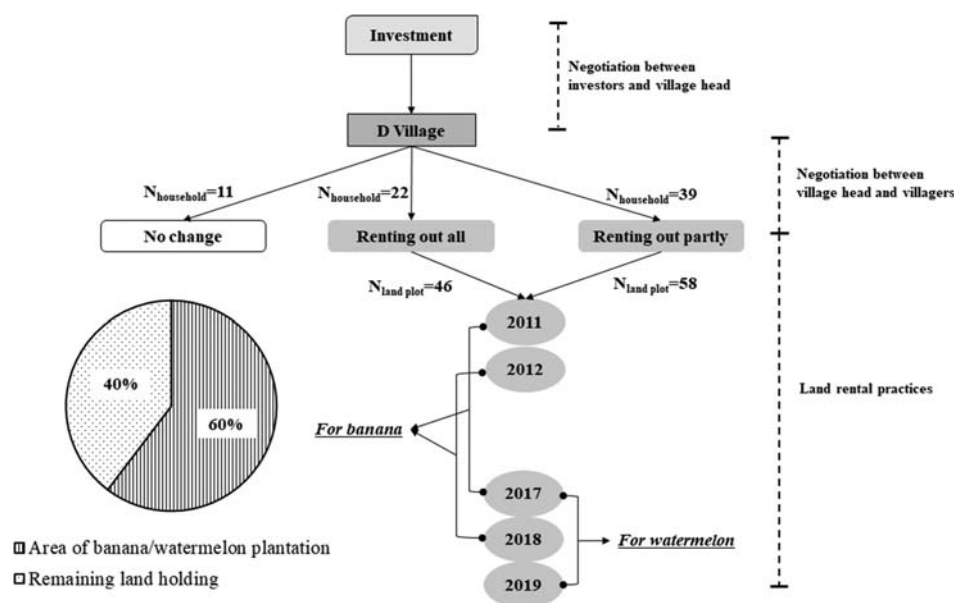


Figure 3. Renting out farmland to outside investors for commercial cropping by local villagers. Source: Authors' survey

each household land rent which was 1,500 RMB/mu. Totally, we rented 300mu of paddy fields. We had to clear the land for the remaining banana trees by hiring laborers. The laborers who cultivated watermelon were from Myanmar; they were paid 900 RMB per month, and we provided free food and accommodation [...] generally, we started seeding in September or October, and the harvest was in three months. Then, we continued the second season for watermelon from January to May. During the rest of the year, we still keep the land and will not return to the households until the contract finishes.

5.3. Diversified reactions from local villagers: land reallocation and differentiation

After renting out paddy fields to these investors (Figure 3), the local villagers neither participated in the farming activities on the fruit farms as hired laborers, nor did they learn from the investors how to cultivate commercial fruit crops. However, the local villagers remained landowners with a stable, fixed, and satisfactory land rent. As one key informant noted,

We do not want to cultivate bananas, because it requires more skills than rice-farming [...] renting out is more profitable than rice-farming by ourselves.

Nevertheless, in a sense, the fruit booms resulted in the reallocation and aggregation of the remaining farmland among the villagers. Land rental of the remaining farmland was highly diversified among the sample households, both strategically and rationally (Figure 4). For example, some households rented out all of their owned farmland, while renting in farmland from the villagers in the dry season or throughout a year. Several households rented out part of their farmland to the investors and the remaining farmland to the villagers. Generally, the diverse types of land rental among the villagers included practicing land rental with fixed terms of several years, annually, or even

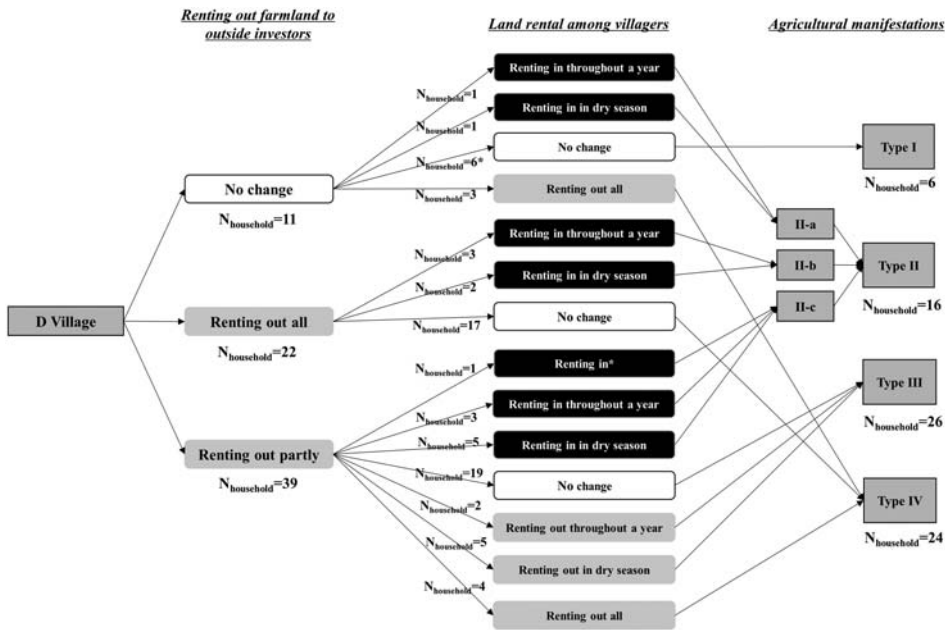


Figure 4. Four emerging agricultural types among sample households after diversified land control changes. Source: Authors' survey.

Note: * There are two households without farmland. In addition, 'Renting in' in this figure includes renting in farmland not only in dry season but also throughout a year.

seasonally, for half a year. Land rent among the villagers was about 500 RMB/mu on average, which was lower than the land rent for fruit booms (there were three households renting out farmland by taking paddy rice as payment rather than cash, at 200 kg/mu and equal to 400 RMB/mu).

Following the survey stage, households were classified into four types, based on our proposed approach, showing the differentiation of agricultural manifestations based on the diversified land rental practices, as well as from the perspective of how the villagers obtained income from different agricultural practices (here, only income from cropping and land rental practices is included, excluding off-farm or other income) (Table 1).

- Farming-maintenance (Type I) households:** These households undertake farming on their current land holdings without any land rental practice.
- Entrepreneur-oriented (Type II) households:** The households obtain income from farming by renting farmland. More specifically, Type II households can be further divided, depending on the income derived from their land through land reallocation (Table 1). Alongside the income from renting out their farmland, Type II-a households also cultivate their own farmland, while Type II-b households do not cultivate their own farmlands but obtain income from renting out all of their farmland. The latter is possibly due to the fact that the soil fertility of these land plots is not as good, or these land plots are geographically separated. Type II-c households cultivate

Table 1. Classification of household types.

Household type		Income from land		
		Farming in own land	Land rent (out-rented land)	In-rented land
I		✓		
II	a	✓		✓
	b		✓	✓
	c	✓	✓	✓
III		✓	✓	
IV			✓	

- their own farmland, obtain land rent from renting out part of the farmland and, simultaneously, cultivate rented-in farmland.
- c) **Landowner-oriented (Type III) households:** Similar to Type II, these landowners derive income from renting out part of their farmland to investors or other households, while neither renting additional farmland nor concentrating on cultivating their remaining land holdings. A characteristic of Type III households is their decreasing farm size.
 - d) **Deagrarianization (Type IV) households:** These households display deagrarianization of the reallocation of their remaining land holdings and obtain income by renting out all of their farmland (Figure 4).

Obviously, most of the sample households showed a willingness and tendency towards agricultural decline and deagrarianization by renting out part or all of their farmland, while few households rented additional farmland.

In terms of labor arrangement and land holdings, a statistically significant difference can be seen in the division of labor forces and land endowments among the four types of households (Table 2), which in turn implies the household dynamics. It is clear that Type IV households mainly depended on off-farm employment, with the greatest number of off-farm laborers, compared to the other three types. Among the remaining three types of households engaged in farming activities to different degrees, Type II and III households contained, on average, two on-farm laborers per household, while the average farm size and average number of land plots of Type II were higher than those of Type III, showing a stronger economic dependency on agriculture. Moreover, off-farm income also emerged as being important for these three types of households, while the number of off-farm laborers in Type I households was double that of Type II and III households. For off-farm employment, nearly 70 percent of the off-farm labor force is working locally within Ruili, based on our household survey. As Song, Chahine, and Sun (2020) argues, the transformation of the internal socioeconomic urban fabric as an important factor is contributing to the (re)shaping of Ruili. Generally, households not only selectively rent out land to investors, but also differentially relocate land control, in order to generate income by considering both on- or off-farm economic incentives and ecological constraints (the location of out-rented land and ecological disturbance from other land parcels).

5.4. Land use change

Following the process of fruit booms and farmland reallocation, households in D Village attempted to farm new market-oriented boom crops, especially in the second season

Table 2. Characteristics of various households on labor arrangement and land holdings (SD is in parentheses).

	Type I	Type II ^a	Type III	Type IV	Chi-square ^b
Average household size	3.7 (0.8)	4.8 (1.5)	4.9 (1.8)	4.1 (2.2)	4.2
Average on-farm laborers	1.0 (0.9)***	2.1 (1.0)***	1.8 (1.1)***	0.0 (0.0)***	44.8
Average part-time laborers	0.5 (1.2)***	0.5 (0.5)***	0.4 (0.8)***	0.0 (0.0)***	14.1
Average off-farm laborers	1.2 (1.0)***	0.7 (0.7)***	0.6 (0.8)***	1.8 (1.3)***	15.4
Average non-laborers ^c	1.0 (0.9)	1.5 (1.4)	2.0 (1.4)	2.3 (1.7)	4.3
Average contracted farm size ^d /mu	5.3 (5.8)***	8.6 (4.1)***	15.9 (7.5)***	9.9 (6.7)***	16.1
Average current farm size/mu	5.3 (5.8)***	10.8 (8.1)***	7.1 (5.4)***	0.0 (0.0)***	48.5
Average number of land plots	1.0 (0.9)***	2.7 (1.7)***	1.3 (0.7)***	0.0 (0.0)***	55.2

Source: Authors' survey

Note: ^aAmong the sample households, one household rented in 150-mu farmland in Mandalay, Myanmar, for watermelon cultivation, which extends from the Mandalay-Muse-Wanding (Wanding is a town in Ruili) corridor to Chinese fruit market. The data were reported excluding this household.

^bThe nonparametric test (Kruskal–Wallis test for four independent samples) was used for comparisons of the sub-catalog among four types of sample households. *** represents significant levels at 1%. Asymptotic significant level as provided.

^cNon-laborers mean the aged people, individuals with poor health, individuals engaging in housework only, preschool children, students and individuals under medicine treatment.

^dContracted farm size excludes in- and out-rented land, which was given to households since the reform of the Household Responsibility System in 1980s.

following the rice harvest. Broadly speaking, according to the changes observed in the crop patterns, the traditional rice-farming systems shifted towards more intensified multiple and multi-season cash crops that are based on rice farming, such as sweet corn (for two seasons, about three months for each) and oriental tobacco.¹⁴ These villager-managed crop booms are triggered not only by domestic or global market demands, but also by government support, which will last around a half-year after the rice harvest. This boom is different from the commonly-defined crop booms that last more than a year (Hall 2011b; Belton, van Asseldonk, and Bush 2017).

The new boom crops managed by local villagers show different developmental trajectories. Oriental tobacco was successfully introduced in Ruili in 2008, due to state-mediated commercialization, as Ruili has suitable natural conditions for growing tobacco. Currently, promoting high-quality oriental tobacco is one of the developments and plans on the agenda of the Ruili government, which hopes to see the growing of such crops integrated into the localization of national rural revitalization and targeted poverty alleviation strategies. The tobacco was produced for a global market, in the form of contract farming¹⁵ between the State Tobacco Company and households. In terms of processing, specifically, tobacco leaves need to be harvested in a very careful and step-by-step manner, following a particular sequential order. Once ready for harvesting, the company purchases the harvest according to the different grades of quality of the tobacco leaves and deducts the cost of the prior provisions. However, very few households in D Village became involved with the tobacco plantation after its introduction. Since 2010, however, more households have gradually begun to largely adopt this crop as the second-season crop (lasting from October to March), following the rice plantation. Unlike the situation with

¹⁴In terms of the area of different cropping patterns, triple cropping of rice and sweet corn is preferred by Type I–III households, followed by double cropping of rice and oriental tobacco.

¹⁵The company provided all agricultural inputs, including seeds, specific fertilizers and other capital inputs, and offered training on how to produce and process oriental tobacco. Actually, the Ruili government has formulated incentive policies and command acquisition plans to promote oriental tobacco cultivation.

oriental tobacco, which was planted as a partnership between the State Tobacco Company and the households, the households made the autonomous decision to plant sweet corn, which is grown for domestic markets. In this process, commission agencies active along the border played an important role in stimulating villagers to cultivate sweet corn. According to our calculation, the net income from sweet corn and oriental tobacco were about 1,000 and 2,900 RMB/mu, respectively. As one key informant mentioned:

In our village, several smallholders tried to cultivate sweet corn by learning from the neighboring Dai and Han villages, starting in 2011[...] We heard that cultivating sweet corn was very profitable. We could cultivate it twice after the rice harvest; the first harvest of sweet corn may fetch a very good price [...] During the harvest time for sweet corn, many commission agents came here to purchase, and we don't need to worry about the marketing [...] Cultivating oriental tobacco is also profitable, but it needs much more processing than sweet corn.

Among the three types of households engaged in farming activities, it became clear that very few land plots were cultivated for rice only. Economically, the benefits of oriental tobacco are much higher than those of sweet corn and rice. However, as previously mentioned, the return of tobacco is highly dependent on the quality of dried tobacco leaves, while that of sweet corn is relatively stable. Formerly, single rice farming was mainly set aside for sales, part of which was used for self-consumption. However, about half of the production was used for self-consumption, representing the transformed function of rice farming from being largely market-oriented to becoming subsistence-oriented. Consequently, land use in D Village has been entirely transformed towards a much more commercial intention and process. This transformation process can be divided into two parts: (1) the investor-managed fruit booms and (2) the local villager-managed new boom crops based on rice farming.

5.5. Agrarian labor regimes

Three specific labor employment practices adopted by local villagers emerged in D Village, including the reciprocal laborer exchanges (*huan gong*), hiring local laborers from D Village or neighboring villages, and hiring Burmese laborers (Table 3). Based on the key informant interviews, Burmese laborers were found to have been present in D Village in high numbers since 2011, especially since the banana boom. These laborers most probably came from Shan State, Myanmar along the China–Myanmar border and, as such, did not present with any language barriers. This short-term migration is different from the migration patterns of the hired wage laborers on fruit farms. In fact, residents on both sides of the China and Myanmar border have the privilege of crossing the border with specific transboundary traffic permits (Baird and Cansong 2017; Hua et al. 2019). In 2013, the Ruili government established the first institution providing a one-stop service to foreigners (mainly Burmese), in order to legalize and institutionalize the migrant workers for prosperous repositioned border economies, such as those dominated by export-led processing and manufacturing industries (Hua et al. 2019; Song, Chahine, and Sun 2020). Long-term stay for employment is allowed after getting the requisite permissions and necessary certificates from the Ruili government (Hua et al. 2019). Fruit booms are mainly accompanied by this long-term labor employment.

Table 3. Agrarian labor regimes of various households.

		Type I	Type II	Type III
Labor employment	Yes	4	16	22
	No	2	0	4
Rice	Reciprocal laborer exchanges (a)	0	2	3
	Hiring local laborers (b)	3	10	12
	Hiring Burmese laborers (c)	2	4	10
Sweet corn	(a)	1	5	11
	(b)	1	8	4
	(c)	1	1	3
Oriental tobacco	(a)	2	10	11
	(b)	0	2	2
	(c)	0	1	1

Source: Authors' survey

Note: For each crop, it contains several periods and activities related to the growth and harvest. Here, the information is collected based on household's major labor employment practice. Even so, one household may still have more than one major practice. In addition, for different crops, one household may have divergent labor employment practices. For example, a household may hire local villagers for the harvest of rice and hire Burmese laborers for processing oriental tobacco. Therefore, the summary of labor employment practices for various crops is larger than that of the total number of a certain practice.

Interestingly but unexpectedly, the labor employment practices adopted by local villagers vary for different crops. Regarding specific crops, households tended to adopt the reciprocal laborer exchanges for oriental tobacco (Table 3). Harvesting and processing tobacco require specific skills that necessitated training by the State Tobacco Company. Owing to the skills gained by many villagers in D Village, they were able to help each other freely during the harvest. Compared with oriental tobacco, local villagers adopted not only reciprocal laborer exchanges, but they also hired local laborers for harvesting sweet corn as required. This probably occurs because sweet corn cultivation lasts around three months each season, and the corn is harvested within a short period, which in turn requires intensive labor inputs. In addition, hiring laborers for rice is emerging as a popular mode of agricultural outsourcing, and almost half of the local villagers hire Burmese laborers as outsourcing objects. This outsourcing may cover a segment or the whole production process of rice cultivation. As rice is one of the dominant staple foods and is widely produced in Myanmar (Matsuda 2011), technically, there is no barrier for Burmese laborers. This situation is different from oriental tobacco and sweet corn. Generally, the price of hiring Burmese laborers is lower than that of hiring local laborers. For example, for harvesting rice, hiring Burmese laborers in 2017 cost 60 RMB/mu, while hiring local labor cost 90 RMB/mu. Despite this, however, not all of the sampled households hired Burmese laborers. As one key informant commented:

We prefer asking the local villagers to help us. Although Burmese laborers can be found easily, we have to wait for them to cross the border [...] Asking local people for help during the harvest time is more convenient and efficient [...] When farming, local laborers are more responsible, compared to some of the Burmese laborers.

Generally speaking, owing to transnational labor migration and existing labor employment, the households in D Village were conveniently able to access the diversified labor market, which was helpful for maintaining and even expanding their agricultural production. Moreover, the availability of machinery further relieved their reliance on manual labor.

5.6. Income disparity

Table 4 shows the variation in income sources for the households in D Village. The table highlights four important points. Firstly, as expected, off-farm income played an important role in the livelihoods of the sampled households (not statistically significant), especially for the Type IV households engaged in off-farm employment and without farming activities (accounting for 50% of total income). This finding shows the general trend of deagrarianization in contemporary rural China. Secondly, practicing commercial crop-farming is still profitable, and this is statistically significant. The finding infers that divergent patterns of crop-farming, labor employment and readjusted farm size potentially contribute to a difference in crop-farming income. Thirdly, although the disparity in wealth among the four types of households is not statistically significant, pluriactivity amongst households, encompassing both crop-farming and off-farm activities, plays an important role in the maintenance of agrarian livelihoods and landscapes. Fourthly, the stable land rent from investor-managed crop booms, which last for at least six or eight years, also occupied an important share of the total income for Type II-IV households.

6. Discussion

6.1. Features of agrarian transformation

In the context of 'secure' land tenure relations, this study argues that crop booms provide local villagers with opportunities to adjust and transform agrarian landscapes and livelihoods. The key manifestation of the agrarian change in this field-based study was the apparent mosaics and separation of farming activities between fruit investors and local households that neither cultivated boom fruit crops themselves, nor participated in farming work as hired wage laborers. Instead, the local households sought out new options for their livelihoods (i.e. intensifying the use of the remaining farmland and diversifying their livelihoods). Generally, outside investors only control part of the farmland. Agrarian landscapes have been transforming towards two divergent manifestations: investor-managed fruit booms supported by transnational labor migration and villager-managed crop booms facilitated by land reallocation and diverse labor employment practices.

Different from the scenario of when 'the land is needed, but the people are not' (Li 2011), in the farmland left over after the land control changes with investors, the second- or third-season crops became the new emphasis of smallholder agriculture. Farmland is now used for other new crop booms for less than one year, for domestic or for export-led purposes, rather than for paddy rice. This is achieved through a process of diversified land rental practices among local households (land control dynamics), which shows an obvious differentiation of livelihood choices. Some households showed no interest in farming; instead, they were more dependent on off-farm activities. This occurs in many parts of East and Southeast Asia, where deagrarianization under industrialization and urbanization, the renting out and selling of farmland, and working in the off-farm sector are all common movements in rural areas (Rigg, Salamanca, and Thompson 2016). Yet somewhat surprisingly, except for commonly adopted livelihood diversification, some households intensified the use of their remaining farmland after farm sizes declined and land reallocation occurred. These households displayed an attitude of

'less farmer, more farming,' especially the entrepreneur-oriented households (i.e. Type II in this study). Although Rigg et al. (2018) pointed out that the average farm size of an Asian smallholder is declining, we could still find variegated interactions and differentiation across and within households. Moreover, an income gap does not seem to be present; nor is statistically insignificant, at least under the current agrarian transformation. Practicing commercial agriculture is also still profitable.

Overall, the agrarian livelihoods have been changed from mostly relying on land on relatively 'large'-sized farms, with few crop and livelihood choices and limited labor forces, to diversified and differentiated livelihoods with 'reduced' and 'reallocated' farm sizes, more options for crops and livelihoods, and a sufficient labor supply. Generally, crop booms provide an opportunity for land reallocation among households through land rental practices, associated with changes in farm sizes resulting from fruit booms. In addition, this implies that the analytical approach proposed by this paper is helpful in linking livelihood strategies and outcomes considering subsistence, commercialization, farm size transition, pluriactivity, and agrarian labor employment. This, in turn, further contributes to the rich description of livelihood diversification in commonalities, largely based on activities, and also challenges the linearity and teleology of agrarian changes.

6.2. Conditions for agrarian transformation

Considering the feature of agrarian transformation, there are several conditions that need to be further interpreted. Firstly, in terms of changes to land-property relations, this study highlights two major points. One point is that China's 'secure' land tenure system and institutional encouragement of land rental practices actively promote the introduction of boom crops. This can be seen as an intervention 'from above' (Xu 2019a), villagers are willing and able to reallocate their land resources, rather than being social-politically dispossessed or coerced. The villagers must consider the balance between obtaining relatively stable profit from renting out land as landowners within a fixed period, or managing the land by themselves. The villagers' decision-making is largely differentiated and diversified. Other studies have found similar results in the industrial tree sector in Guangxi Province, China (Xu 2019b). The other point is that villagers in this study tended to selectively and carefully rent out their land, either partly or wholly, to investors, taking into consideration the location, quality and productivity of the land, and thus making the land that remained more aggregated. This decision making is largely based on the economic 'risk-return' trade off.

With regard to fruit booms under the umbrella of tenure security, three main intertwined reasons are identified here that explain why local households in this study did not engage in the same business with the investors in terms of crop adoption or labor, as indicated by the key informant interviews. The first reason is that the households perceived that fruit cultivation (such as banana) needs more skills and intensive labor inputs. They felt this hard work could be performed by transnational Burmese laborers, given the comparative advantage in terms of the latter's low labor price. The second reason is that local villagers were worried about the uncertainties surrounding banana disease and an uncertain market price. Therefore, obtaining stable land rent from fruit investors seemed rational and strategic, as these contracts could last for at least six to eight years, or even longer. The third reason is that potential markets for other cash crops are emerging along

the border. Fruit booms stimulated the local people to develop their own ideas for exploring and adopting new boom crops. In terms of crop types, local households actively adopted oriental tobacco and sweet corn as the crops to follow paddy rice, as these crops better match their skills, compared with the skills required in fruit booms. Oriental tobacco was not new, although only a few households had cultivated it prior to the fruit booms. This is possibly because of the mismatch between the villagers' resources (i.e. farm size and labor dimension) and those needed to grow new boom crops, such as oriental tobacco, even though growing tobacco was profitable. However, once land reallocation occurred, many households adopted this new crop in a contract farming partnership with the State Tobacco Company. In addition, the adoption of sweet corn was initiated by local households themselves in cooperation with the commission agencies along the China-Myanmar border. This finding shows that these households are opportunistic and have strong adaptability in terms of responding to market boom and demand. Generally, villagers do not need to pay much attention to marketing, given that oriental tobacco, rice and sweet corn all tend to be immediately sold out to buyers. These findings would also help to understand the 'friction of innovation' with regard to the adoption of a new crop (Rigg 1986).

Secondly, alongside the farm size transition, transnational labor migration is an important condition for this agrarian transformation. As Harvey (2010) argued, the permanent availability of sufficient and accessible labor force reserves contributes to perpetual accumulation. Transnational inward labor migration plays an important role in sustaining the commercial agriculture of the China-Myanmar borderland, in the context of fruit booms and livelihood diversification. With single-season rice cropping (prior to the fruit booms), household income mainly relied on the advantages of 'scale' and reciprocal laborer exchanges, or on the hiring of local laborers. Due to the supply of cheap and available laborers from Myanmar, which is institutionally legitimized by local government, local households could hire temporary Burmese laborers based on the emerging transnational labor market. Except for the economic growth in China, Hua et al. (2019) also pointed out that the asymmetries between China and Myanmar (such as income levels and job opportunities), and also the social-ecological impacts (such as natural hazards), are also important factors driving Burmese labor migration into China. Depending on the available labor market, local villagers were transformed into landowners, employers, or entrepreneurs. In this study, commercial farming by local villagers, with new crop booms in reallocated farmland, is much more profitable and beneficial for entrepreneur-oriented households, even more so than those featuring deagrarianization (Table 4). Most importantly, this finding highlights that an abundant labor supply and following changing land-labor relations are decisive factors in agrarian capitalization in China's borderlands. In terms of crop booms, many studies have explored how boom-induced labor migrants, both domestically and/or transnationally, experience conditions of exploitation (Li 2011; Rigg 2014). Burmese migrant laborers are attracted into China for reasons of more job opportunities and labor demand, relatively better payment, geographical proximity for seasonal or circular migration, and an agrarian crisis on the Myanmar side. However, informal and illegal migrant workers can be also found (Borras et al. 2020). As Borras et al. (2020, 37) claimed, 'the conditions of Burmese's migrant workers are consciously calculated and reshaped by the migrant workers themselves [...] They are not helpless, passive victims of migrant labor corridors – they actively reshape the very

terrain of these corridors.’ Further, we support the viewpoint that ‘the assumption that migration is only a negative event that occurs when rural people are pushed off their land’ should be challenged (Kelley et al. 2020).

Lastly, as McCusker and Carr (2006) effectively argued, livelihood systems and land uses are not only interlinked in a ‘driver-feedback’ relationship. Rather, they are also co-produced as ‘different manifestations of social processes, by which individuals and groups negotiate the everyday conditions that shape their lives.’ We therefore argue that crop booms inside China by domestic capital, agrarian livelihood transformation, and (re)shaped differentiated countryside are the result of the co-production of transnational labor migration and state-led border repositioning. As discussed, this repositioned borderland has provided local people more off-farm job opportunities and attracted investment in many areas, such as agricultural investment and cross-border trade, which in turn has created a platform for rural-urban interactions. In addition, Hua et al. (2019) stressed that the Ruili authority set up the Foreigners Service and Administration Centre in 2013, in order to provide one-stop services to attract Burmese workers to China. Consequently, this borderland has also become a region with multiple and multidirectional opportunities, including for investment and off-farm employment, regional integration, and transnational linkages.

7. Conclusions

This study focuses on the micro-level transformation trajectories in agricultural practices and rural society under the backdrop of ongoing fruit booms with secure land control relations on the Yunnan frontier along the China–Myanmar border. In this context, China’s traditional rice farming system has been unprecedentedly and rapidly disaggregated and transformed to fruit investors managing fruit farms. Meanwhile, local households are cultivating rice-based multi-cropping systems for other new crop booms with the characteristic of multiple cropping (but for less than one year) for either domestic or export-led purposes, all of which is based on land control dynamics. In this study, local households were found to have rapidly rented out a large amount of their own farmland, supporting the commercial process of fruit expansion. However, these local households neither cultivated the latter fruit crops by themselves, nor did they participate in the farming work as hired laborers. Instead, they sought out new options for their livelihoods. The benefits that fruit booms bring to Chinese rural society mainly include stable land rent (an important income source), a motivated land rental market, and opportunities to further diversify and differentiate the local people’s livelihoods. This shows that deagrarianization is becoming a general trend in rural China, while some households are still making their living mainly through agricultural production. Generally, crop booms provide an opportunity for rural villagers to readjust land resources among households. Consequently, an agrarian transformation has emerged in rural society, the key manifestation of which in this study is the apparent separation of farming activities between fruit investors and local households. This is similar to other cases in which local people’s farmland has been involved in supporting the crop booms, while local villagers in this study innovatively adopted new options for their livelihoods, rather than following the same strategies or establishing partnerships with the investors.

Three triggers contribute prominently to contemporary agrarian transformation. Those three triggers include: (1) secure land tenure systems providing both investors and villagers with incentives for multiple boom crops; (2) transnational labor flows in borderlands, showing that labor availability for (mainly) investors and local villagers is still a key factor supporting crop booms and no longer a constraint, and (3) emerging repositioned borderland with potentiality for crop booms and off-farm opportunities. Generally, we argue that crop booms and concomitant agrarian changes should be understood to be the co-production of state-led border repositioning and transnational labor migration. We further highlight the implication that it is crucial to examine not only the interaction between crop booms and local villagers, but also how local villagers make a living after crop booms. Both these things must be analyzed, in order to comprehensively capture grounded agrarian transformation. In doing so, diverse situated and contextual factors should be (re)considered. These findings contribute to the existing body of literature on changing agrarian societies in the context of crop booms.

Two emerging issues related to this study need to be addressed; these issues could be a new research direction in future studies. Firstly, the environmental consequences of crop booms are not discussed. Except for intensive agricultural inputs (e.g. chemical fertilizer) in the horticultural boom moving to the borderlands as a frontier of extraction, competition between crops (e.g. banana and rice in this paper) is also found. This may cause further land control dynamics and even resistance. 'Coercion' or 'dispossession' may not be detected from social-political perspectives, while these things may be explored and conceptualized from ecological considerations. Secondly, highlighting transnationalism requires further understanding of livelihoods in both Myanmar and China. However, this paper only emphasizes Burmese agricultural laborers and their income source inside China. As Borrás et al. (2020, 14) argued, 'change in rural villages across Myanmar is linked to change in rural villages in China.' Therefore, further knowledge of migration and changes in the agrarian livelihoods of Burmese laborers based on in-depth fieldwork could contribute to future research.

Acknowledgments

The authors would like to thank Dr. Yunan Xu, Dr. Ricardo Jacobs and Dr. Yiyuan Chen for their valuable comments on an earlier draft of this paper presented in the JPS Writeshop-Workshop 2019. We thank all the investigated villagers who are patient with our endless questions. We are very grateful to two anonymous reviewers, Dr. Decha Tangseefa, and Dr. Tuyen Nghiem for their insightful comments that helped in improving the manuscript.

Disclosure statement

No potential conflict of interest was reported by the author(s).

Funding

This research was conducted with the financial supports from the Japan Society for the Promotion of Science (JSPS) (No. 19K23128 and 20H04422) and National Natural Science Foundation of China (No. 41829101 and 41601095).

ORCID

Xiaobo Hua  <http://orcid.org/0000-0002-0159-1776>

References

- Baird, I. G., and L. Cansong. 2017. "Variegated Borderlands Governance in Dehong Dai-Jingpo Autonomous Prefecture Along the China-Myanmar Border." *Geoforum; Journal of Physical, Human, and Regional Geosciences* 85: 214–224. doi:[10.1016/j.geoforum.2017.07.026](https://doi.org/10.1016/j.geoforum.2017.07.026).
- Baird, I., and J. Fox. 2015. "How Land Concessions Affect Places Elsewhere: Telecoupling, Political Ecology, and Large-Scale Plantations in Southern Laos and Northeastern Cambodia." *Land* 4 (2): 436–453. doi:[10.3390/land4020436](https://doi.org/10.3390/land4020436).
- Barney, K. 2012. "Land, Livelihoods, and Remittances: A Political Ecology of Youth out-Migration Across the lao-Thai Mekong Border." *Critical Asian Studies* 44 (1): 57–83. doi:[10.1080/14672715.2012.644887](https://doi.org/10.1080/14672715.2012.644887).
- Beban, A., and T. Gorman. 2017. "From Land Grab to Agrarian Transition? Hybrid Trajectories of Accumulation and Environmental Change on the Cambodia–Vietnam Border." *Journal of Peasant Studies* 44 (4): 748–768. doi:[10.1080/03066150.2016.1241770](https://doi.org/10.1080/03066150.2016.1241770).
- Beijing Orient Agribusiness Consultants Limited. 2013. *Yearbook on China's Agricultural Products of 2013*. Beijing. Accessed February 6, 2020. <https://navi.cnki.net/knavi/YearbookDetail?pcode=CYFD&pykm=YNPCY>.
- Belton, B., I. J. M. van Asseldonk, and S. R. Bush. 2017. "Domestic Crop Booms, Livelihood Pathways and Nested Transitions: Charting the Implications of Bangladesh's Pangasius Boom." *Journal of Agrarian Change* 17 (4): 694–714. doi:[10.1111/joac.12168](https://doi.org/10.1111/joac.12168).
- Borras, Jr., S. M., and J. C. Franco. 2013. "Global Land Grabbing and Political Reactions 'From Below'." *Third World Quarterly* 34 (9): 1723–1747. doi:[10.1080/01436597.2013.843845](https://doi.org/10.1080/01436597.2013.843845).
- Borras, Jr., S. M., J. Liu, Z. Hu, H. Li, C. Wang, Y. Xu, J. C. Franco, and J. Ye. 2018. "Land Control and Crop Booms Inside China: Implications for How We Think About the Global Land Rush." *Globalizations* 15 (1): 134–151. doi:[10.1080/14747731.2017.1408287](https://doi.org/10.1080/14747731.2017.1408287).
- Borras, Jr., S. M., Doi Ra, Jennifer C. Franco, Khu Khu Ju, Khun Oo, Kyar Yin Shell, Kyaw Thu, et al. 2020. *Myanmar's Cross-Border Migrant Workers and the Covid-19 Pandemic*. Amsterdam: Transnational Institute (TNI) Report.
- Bryceson, D. F. 1996. "Deagrarianization and Rural Employment in sub-Saharan Africa: A Sectoral Perspective." *World Development* 24 (1): 97–111. doi:[10.1016/0305-750X\(95\)00119-W](https://doi.org/10.1016/0305-750X(95)00119-W).
- Byres, T. J. 1977. "Agrarian Transition and the Agrarian Question." *Journal of Peasant Studies* 4 (3): 258–274. doi:[10.1080/03066157708438024](https://doi.org/10.1080/03066157708438024).
- Fox, J. 2009. "Crossing Borders, Changing Landscapes: Land-Use Dynamics in the Golden Triangle." *Asia Pacific Issues* 92: 1–8.
- Friis, C., J. Lu, J. C. Castella, R. Cole, M. Kenney-Lazar, S. Mahanty, P. Pravalprukskul, and I. Vagneron. 2019. "Crop Booms: What We know about Smallholder Involvement ... and Why It Matters." *New Mandala*, November 1. Accessed 16 September 2020. <https://www.newmandala.org/smallholder-crop-booms/>.
- Friis, C., and JØ Nielsen. 2016. "Small-Scale Land Acquisitions, Large-Scale Implications: Exploring the Case of Chinese Banana Investments in Northern Laos." *Land Use Policy* 57: 117–129. doi:[10.1016/j.landusepol.2016.05.028](https://doi.org/10.1016/j.landusepol.2016.05.028).
- Hall, D. 2011a. "Land Grabs, Land Control, and Southeast Asian Crop Booms." *Journal of Peasant Studies* 38 (4): 837–857. doi:[10.1080/03066150.2011.607706](https://doi.org/10.1080/03066150.2011.607706).
- Hall, D. 2011b. "Where the Streets are Paved with Prawns: Crop Booms and Migration in Southeast Asia." *Critical Asian Studies* 43 (4): 507–530. doi:[10.1080/14672715.2011.623518](https://doi.org/10.1080/14672715.2011.623518).
- Hall, D. 2013. *Land*. Cambridge: Polity Press.
- Hall, D., P. Hirsch, and T. M. Li. 2011. *Powers of Exclusion: Land Dilemmas in Southeast Asia*. Honolulu: University of Hawai'i Press.
- Harvey, D. 2010. *The Enigma of Capital and the Crises of Capitalism*. New York: Oxford University Press.

- Hebinck, P. 2018. "De-/re-agrarianisation: Global Perspectives." *Journal of Rural Studies* 61: 227–235. doi:[10.1016/j.jrurstud.2018.04.010](https://doi.org/10.1016/j.jrurstud.2018.04.010).
- Hua, X. 2019. *Land Use Change and Livelihood Transition in the China-ASEAN Borderland*. Ph.D. Dissertation. Kyoto University. doi:[10.14989/doctor.k21904](https://doi.org/10.14989/doctor.k21904)
- Hua, X., Y. Kono, L. Zhang, E. Xu, and R. Luo. 2019. "How Transnational Labor Migration Affects Upland Land use Practices in the Receiving Country: Findings from the China-Myanmar Borderland." *Land Use Policy* 84: 163–176. doi:[10.1016/j.landusepol.2019.03.012](https://doi.org/10.1016/j.landusepol.2019.03.012).
- Huang, P. C. C. 2016. "China's Hidden Agricultural Revolution, 1980–2010, in Historical and Comparative Perspective." *Modern China* 42 (4): 339–376. doi:[10.1177/0097700415626137](https://doi.org/10.1177/0097700415626137).
- Huang, P. C. C. 2017. "The Three Models of China's Agricultural Development: Strengths and Weaknesses of the Administrative, Laissez Faire, and Co-Op Approaches." *Rural China: An International Journal of History and Social Science* 14 (2): 488–527. doi:[10.1163/22136746-01302008](https://doi.org/10.1163/22136746-01302008).
- Hurni, K., and J. Fox. 2018. "The Expansion of Tree-Based Boom Crops in Mainland Southeast Asia: 2001 to 2014." *Journal of Land Use Science* 13 (1-2): 198–219. doi:[10.1080/1747423X.2018.1499830](https://doi.org/10.1080/1747423X.2018.1499830).
- Jacka, T. 2018. "Translocal Family Reproduction and Agrarian Change in China: a new Analytical Framework." *Journal of Peasant Studies* 45 (7): 1341–1359. doi:[10.1080/03066150.2017.1314267](https://doi.org/10.1080/03066150.2017.1314267).
- Kastner, T., M. J. I. Rivas, W. Koch, and S. Nonhebel. 2012. "Global Changes in Diets and the Consequences for Land Requirements for Food." *Proceedings of the National Academy of Sciences* 109 (18): 6868–6872. doi:[10.1073/pnas.1117054109](https://doi.org/10.1073/pnas.1117054109).
- Kelley, L. C., N. L. Peluso, K. M. Carlson, and S. Affif. 2020. "Circular Labor Migration and Land-Livelihood Dynamics in Southeast Asia's Concession Landscapes." *Journal of Rural Studies* 73: 21–33. doi:[10.1016/j.jrurstud.2019.11.019](https://doi.org/10.1016/j.jrurstud.2019.11.019).
- Kelly, P. F. 2011. "Migration, Agrarian Transition, and Rural Change in Southeast Asia: Introduction." *Critical Asian Studies* 43 (4): 479–506. doi:[10.1080/14672715.2011.623516](https://doi.org/10.1080/14672715.2011.623516).
- Kenney-lazar, M. 2018a. "Governing Dispossession: Relational Land Grabbing in Laos." *Annals of the American Association of Geographers* 108 (3): 679–694. doi:[10.1080/24694452.2017.1373627](https://doi.org/10.1080/24694452.2017.1373627).
- Kenney-lazar, M. 2018b. *Excavating the Hidden Politics of Land Governance in Laos*. CSEAS Newsletter No.76. Kyoto, 26–29.
- Kono, Y., T. Sato, K. Watanabe, and S. Tomita. 2018. "Reconsidering Development Mechanisms of Tropical Agriculture: Focusing on Micro-Development in Mainland Southeast Asia." In *Environmental Resources Use and Challenges in Contemporary Southeast Asia*, edited by M. Lopez and J. Suryomenggolo, 21–39. Singapore: Springer. doi:[10.1007/978-981-10-8881-0_2](https://doi.org/10.1007/978-981-10-8881-0_2).
- Kubo, K. 2018. "Myanmar's Fresh Fruit Export to China via Cross-Border Trade." In *Impact of China's Increasing Demand for Agro Produce on Agricultural Production in the Mekong Region*, edited by K. Kubo, and S. Sakata, 1–16. Bangkok: BRC (Bangkok Research Center) Research Report.
- Li, T. M. 2011. "Centering Labor in the Land Grab Debate." *Journal of Peasant Studies* 38 (2): 281–298. doi:[10.1080/03066150.2011.559009](https://doi.org/10.1080/03066150.2011.559009).
- Ma, X., N. Heerink, E. van Ierland, M. van den Berg, and X. Shi. 2013. "Land Tenure Security and Land Investments in Northwest China." *China Agricultural Economic Review* 5 (2): 281–307. doi:[10.1108/17561371311331133](https://doi.org/10.1108/17561371311331133).
- Matsuda, M. 2011. "Intensification Level of Rice Farming in Myanmar: Implication for its Sustainable Development." *Environment, Development and Sustainability* 13 (1): 51–64. doi:[10.1007/s10668-010-9247-7](https://doi.org/10.1007/s10668-010-9247-7).
- McCusker, B., and E. R. Carr. 2006. "The Co-Production of Livelihoods and Land use Change: Case Studies from South Africa and Ghana." *Geoforum; Journal of Physical, Human, and Regional Geosciences* 37 (5): 790–804. doi:[10.1016/j.geoforum.2005.09.007](https://doi.org/10.1016/j.geoforum.2005.09.007).
- Mills, E. N. 2018. "Framing China's Role in Global Land Deal Trends: why Southeast Asia is Key." *Globalizations* 15 (1): 168–177. doi:[10.1080/14747731.2017.1400250](https://doi.org/10.1080/14747731.2017.1400250).
- Mingochi, D. 1998. "Consultancy Report on First Extension Staff Training in Horticulture." FAO special programme for food security in Zambia; Small-holder irrigation and water use programme-irrigation component.

- Ministry of Agriculture. 2016. *2016 China Agricultural Trade Development Report*. Beijing: China Agriculture Press.
- Nghiem, T., Y. Kono, and S. J. Leisz. 2020. "Crop Boom as a Trigger of Smallholder Livelihood and Land use Transformations: The Case of Coffee Production in the Northern Mountain Region of Vietnam." *Land* 9 (2): 56. doi:[10.3390/land9020056](https://doi.org/10.3390/land9020056).
- Qian, J., and X. Tang. 2019. "Theorising Small City as Ordinary City: Rethinking Development and Urbanism from China's South-West Frontier." *Urban Studies* 56 (6): 1215–1233. doi:[10.1177/0042098018762925](https://doi.org/10.1177/0042098018762925).
- Rao, F., M. Spoor, X. Ma, and X. Shi. 2016. "Land Tenure (in) Security and Crop-Tree Intercropping in Rural Xinjiang, China." *Land Use Policy* 50: 102–114. doi:[10.1016/j.landusepol.2015.09.001](https://doi.org/10.1016/j.landusepol.2015.09.001).
- Rigg, J. 1986. "Innovation and Intensification in Northeastern Thailand: Brookfield Applied." *Pacific Viewpoint* 27 (1): 29–45. doi:[10.1111/apv.271002](https://doi.org/10.1111/apv.271002).
- Rigg, J. 2014. *The Shadows of Success: Transformation and marginalisation in Southeast Asia*. Keynote address delivered at The 12th Asia and the Pacific Sociological Association Conference, Chiang Mai.
- Rigg, J., A. Salamanca, M. Phongsiri, and M. Sripun. 2018. "More Farmers, Less Farming? Understanding the Truncated Agrarian Transition in Thailand." *World Development* 107: 327–337. doi:[10.1016/j.worlddev.2018.03.008](https://doi.org/10.1016/j.worlddev.2018.03.008).
- Rigg, J., A. Salamanca, and E. C. Thompson. 2016. "The Puzzle of East and Southeast Asia's Persistent Smallholder." *Journal of Rural Studies* 43: 118–133. doi:[10.1016/j.jrurstud.2015.11.003](https://doi.org/10.1016/j.jrurstud.2015.11.003).
- Rousseau, J. F. 2018. "A Failed Market Experiment and Ignored Livelihoods: Jatropha Expansion in the Sino-Vietnamese Borderlands." In *Routledge Handbook of Asian Borderlands*, edited by H. Alexander, S. Martin, and R. Alessandro, 202–212. Abingdon: Routledge.
- Rousseau, J. F., and J. Sturgeon. 2019. "The Disappearance of Water Buffalo from Agrarian Landscapes in Western China." *Journal of Agrarian Change* 19 (2): 319–336. doi:[10.1111/joac.12289](https://doi.org/10.1111/joac.12289).
- Sargeson, S. 2013. "Violence as Development: Land Expropriation and China's Urbanization." *Journal of Peasant Studies* 40 (6): 1063–1085. doi:[10.1080/03066150.2013.865603](https://doi.org/10.1080/03066150.2013.865603).
- Saxer, M., R. Alessandro, and H. Alexander. 2018. "Asian Borderlands in a Global Perspective." In *Routledge Handbook of Asian Borderlands*, edited by H. Alexander, S. Martin, and R. Alessandro, 1–14. Abingdon: Routledge.
- Schoenberger, L., D. Hall, and P. Vandergeest. 2017. "What Happened When the Land Grab Came to Southeast Asia?" *Journal of Peasant Studies* 44 (4): 697–725. doi:[10.1080/03066150.2017.1331433](https://doi.org/10.1080/03066150.2017.1331433).
- Song, T., T. Chahine, and M. Sun. 2020. "Ruili, China: The China–Myanmar Nexus Hub at the Crossroads." *Cities* 104: 102766. doi:[10.1016/j.cities.2020.102766](https://doi.org/10.1016/j.cities.2020.102766).
- The State Council of the People's Republic of China. 2019. "China to Maintain Stable Rural Land Contracting." 28 November. Accessed 18 January 2021. http://english.www.gov.cn/statecouncil/ministries/201911/28/content_WS5ddfaea1c6d0bcf8c4c17fc9.html.
- Sturgeon, J. C. 2013. "Cross-Border Rubber Cultivation Between China and Laos: Regionalization by Akha and Tai Rubber Farmers." *Singapore Journal of Tropical Geography* 34 (1): 70–85. doi:[10.1111/sjtg.12014](https://doi.org/10.1111/sjtg.12014).
- Su, X. 2016. "Repositioning Yunnan: Security and China's Geoeconomic Engagement with Myanmar." *Area Development and Policy* 1 (2): 178–194. doi:[10.1080/23792949.2016.1197780](https://doi.org/10.1080/23792949.2016.1197780).
- Summers, T. 2012. "(Re)Positioning Yunnan: Region and Nation in Contemporary Provincial Narratives." *Journal of Contemporary China* 21 (75): 445–459. doi:[10.1080/10670564.2011.647433](https://doi.org/10.1080/10670564.2011.647433).
- Sutton, M. Q., and E. N. Anderson. 2013. *Introduction to Cultural Ecology (Third Edition)*. Maryland: AltaMira Press, A division of Rowman & Littlefield.
- Thongmanivong, S., and Y. Fujita. 2006. "Recent Land Use and Livelihood Transitions in Northern Laos." *Mountain Research and Development* 26 (3): 237–244. doi:[10.1659/0276-4741\(2006\)26\[237:RLUALT\]2.0.CO;2](https://doi.org/10.1659/0276-4741(2006)26[237:RLUALT]2.0.CO;2).
- Vicol, M., B. Pritchard, and Y. Y. Htay. 2018. "Rethinking the Role of Agriculture as a Driver of Social and Economic Transformation in Southeast Asia's Upland Regions: The View from Chin State, Myanmar." *Land Use Policy* 72: 451–460. doi:[10.1016/j.landusepol.2018.01.009](https://doi.org/10.1016/j.landusepol.2018.01.009).

- Woods, K. M. 2020. "Smaller-scale Land Grabs and Accumulation from Below: Violence, Coercion and Consent in Spatially Uneven Agrarian Change in Shan State, Myanmar." *World Development* 127: 104780. doi:10.1016/j.worlddev.2019.104780.
- Xu, Y. 2018. "Land Grabbing by Villagers? Insights from Intimate Land Grabbing in the Rise of Industrial Tree Plantation Sector in Guangxi, China." *Geoforum; Journal of Physical, Human, and Regional Geosciences* 96: 141–149. doi:10.1016/j.geoforum.2018.08.012.
- Xu, Y. 2019a. "Rethinking the Politics of Land-use Change: Insights from the Rise of the Industrial Tree Plantation Sector in Southern China." *Land Use Policy* 87: 104025. doi:10.1016/j.landusepol.2019.104025.
- Xu, Y. 2019b. "Politics of Inclusion and Exclusion in the Chinese Industrial Tree Plantation Sector: the Global Resource Rush Seen from Inside China." *Journal of Peasant Studies* 46 (4): 767–791. doi:10.1080/03066150.2017.1405936.
- Xu, Y. 2020. *Industrial Tree Plantations and the Land Rush in China: Implications for Global Land Grabbing*. Abingdon: Routledge.
- Yaacob, O., and S. Subhadrabandhu. 1995. *The Production of Economic Fruits in South-East Asia*. New York: Oxford University Press.
- Yan, H., and Y. Chen. 2015. "Agrarian Capitalization Without Capitalism? Capitalist Dynamics from Above and Below in China." *Journal of Agrarian Change* 15 (3): 366–391. doi:10.1111/joac.12121.
- Ye, J. 2015. "Land Transfer and the Pursuit of Agricultural Modernization in China." *Journal of Agrarian Change* 15 (3): 314–337. doi:10.1111/joac.12117.
- Yin, D., J. Qian, and H. Zhu. 2019. "Frontier Development in the Midst of Ecological Civilization: Unravelling the Production of Maca in Yunnan, China." *Geoforum; Journal of Physical, Human, and Regional Geosciences* 106: 144–154. doi:10.1016/j.geoforum.2019.08.005.
- Zhan, S., H. Zhang, and D. He. 2018. "China's Flexible Overseas Food Strategy: Food Trade and Agricultural Investment between Southeast Asia and China in 1990–2015." *Globalizations* 15 (5): 702–721. doi:10.1080/14747731.2018.1491688.
- Zhang, Q. F. 2015. "Class Differentiation in Rural China: Dynamics of Accumulation, Commodification and State Intervention." *Journal of Agrarian Change* 15 (3): 338–365. doi:10.1111/joac.12120.
- Zhang, J. 2019. "Beyond the 'Hidden Agricultural Revolution' and 'China's Overseas Land Investment': Main Trends in China's Agriculture and Food Sector." *Journal of Contemporary China* 28 (119): 746–762. doi:10.1080/10670564.2019.1580431.
- Zhang, L., Y. Kono, X. Hua, L. Zheng, and R. Zhou. 2017. "Understanding Farmers' Adoption Decisions for new Cash Crops: Evidence from Xishuangbanna in Tropical China." *Problemy Ekorozwoju* 12: 99–108.
- Zhang, L., Y. Kono, and S. Kobayashi. 2014. "The Process of Expansion in Commercial Banana Cropping in Tropical China: A Case Study at a Dai Village, Mengla County." *Agricultural Systems* 124: 32–38. doi:10.1016/j.agry.2013.10.006.
- Zhang, L., Y. Kono, S. Kobayashi, H. Hu, R. Zhou, and Y. Qin. 2015. "The Expansion of Smallholder Rubber Farming in Xishuangbanna, China: A Case Study of Two Dai Villages." *Land Use Policy* 42: 628–634. doi:10.1016/j.landusepol.2014.09.015.
- Zhou, Y., X. Li, and Y. Liu. 2020. "Rural Land System Reforms in China: History, Issues, Measures and Prospects." *Land Use Policy* 91: 104330. doi:10.1016/j.landusepol.2019.104330.
- Zhuang, L., and X. Zheng. 2016. "Research on Trade Intensity and Potentiality of Tropical Fruits Trade Between China and ASEAN." *Journal of South China Agricultural University: Social Science Edition* 15 (1): 82–91. (in Chinese).
- Zinda, J. A., and J. He. 2020. "Ecological Civilization in the Mountains: How Walnuts Boomed and Busted in Southwest China." *Journal of Peasant Studies* 47 (5): 1052–1076. doi:10.1080/03066150.2019.1638368.

Xiaobo Hua is a development geographer and an Associate Professor at the College of Humanities and Development Studies (COHD), China Agricultural University. His research interests include agrarian change and peasant studies, land use and rural development, and mountain pastoralism in southwest China and mainland Southeast Asia. Email: huaxiaobo1988@gmail.com

Yasuyuki Kono is a Professor at the Center for Southeast Asian Studies (CSEAS), Kyoto University. His research interests include sustainable humanosphere studies, dynamics of agriculture and livelihood transition of rural Southeast Asia, and regional and local societies and STI for SDGs. Email: kono@cseas.kyoto-u.ac.jp

Le Zhang is an Associate Professor of Human Geography at the School of Geography and Environment, Jiangxi Normal University, China. His research interests include rural development, land use, and livelihood transition in rural China. Email: zhangle9527@gmail.com