

Transformation of Agricultural Wage Systems and Its Implications for Farmers in Cepogo, Boyolali, Central Java, Indonesia

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Abstract. The *gotong royong* (mutual cooperation) system was initially used to manage labor in Indonesian agriculture, including in Genteng Village, Cepogo Subdistrict, Boyolali Regency, Central Java Province. Over time, the family structure changed, and many younger villagers migrated to cities in pursuit of employment, resulting in a labor shortage. Consequently, the agricultural system gradually transformed into a wage system. The purpose of this study is to characterize the shifts from mutual cooperation to a wage system, pinpoint contributing factors, and examine how the wage system affects farmers and farmworkers. The case studies in this study are designed using a qualitative approach and presented descriptively with thematic analysis. NVivo 12 Software was used to process verbatim data gathered through interviews, observations, and documentation studies. Agricultural labor has evolved into an economic transaction rather than an expression of social solidarity. Genteng Village now employs two different wage systems: a daily wage system and a wholesale system. The wage system has new implications for the economic, social, and psychological well-being of farmers and farmworkers. Although the wage system is largely unavoidable, the values of mutual cooperation and social solidarity should be integrated into contemporary agricultural practices.

1 Introduction

Labor is crucial to agricultural productivity, particularly in Indonesia, where human labor remains more important than mechanization. The availability of adequate labor can influence crop yields in terms of both quantity and quality. Additionally, equitable labor allocation improves agricultural efficiency, especially in crop maintenance, land management, harvesting, and post-harvest processes [1]. Therefore, sustaining the agricultural sector depends on effective workforce management.

The *gotong royong* (mutual cooperation) system was initially used to manage employment in Indonesian agriculture, especially in Genteng Village, Cepogo Subdistrict, Boyolali Regency, Central Java Province. Besides helping complete agricultural tasks, this exercise strengthens family ties. Agricultural activities such as hoeing, planting, and harvesting were traditionally carried out cooperatively without monetary compensation. But

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with time, these conditions started to alter. A change in family structure is one of the main reasons causing these changes.

Due to a large number of young people leaving the village in search of jobs in the city, a labor shortage emerged on the property that was formerly managed collaboratively [2]. These circumstances forced farmers to find alternative solutions, leading them to hire workers to complete jobs in the field. In order to sustain agricultural operations, especially during the growing season, the wage system was eventually adopted.

Changes in people's lifestyles have impacted the shift from mutual cooperation to a wage-based system [3]. The village's formerly simple way of life has now changed to accommodate the expanding needs of the economy. Although mutual cooperation can strengthen social relationships within families, it cannot satisfy increasing labor demands. The wage system enables better job organization, clearer scheduling, and more measurable objectives. Economic variables can have a big impact on this transformation. Cash is now paid for labor on land that was previously unpaid, indicating a change in society and an understanding of the value of land labor. Farmworkers can use the income they receive from this scheme to support their families. Thus, this shift creates a new dynamic in the connection between farmers and laborers, contrasting with the familial link created via reciprocal collaboration.

Due to favorable environmental conditions, the majority of farmers in Genting Village grow horticultural commodities as staple crops. However, certain agricultural modernization tools are inaccessible because of the village's mountainous topography. Large agricultural tools, such as conventional tractors, are challenging to operate in mountainous areas with fragmented land, steep slopes, and limited road access. This can limit agricultural modernization and reduce work efficiency by 30–50% [4]. As a result, the dependence on human labor, specifically farm labor, remains high.

The wage system is a reflection of society's attempts to negotiate the way of working without abandoning important socio-cultural elements, rather than representing merely a technical change in labor practices. Several previous studies have focused on the economic aspects of wages and labor productivity in the context of wage system changes [5]. Nonetheless, limited research has been done on the economic, social, and cultural effects of the labor transition with the wage system, particularly regarding the well-being of Indonesian horticultural farmers. The purpose of this study is to describe the shifts from mutual cooperation to wages, pinpoint contributing factors, and examine how the wage system affects farmers and farm workers.

2 Methodology

The case studies in this study were designed using a qualitative approach and are presented descriptively. This method was selected because it enables researchers to investigate the values, experiences, and meanings that contextually influence agricultural work practices [6]. Genting village, Cepogo Subdistrict, Boyolali Regency, Central Java, was chosen purposively due to its horticultural agricultural location on the slopes of Mount Merbabu. Farmers in Genting Village are dealing with the challenges of labor regeneration and shifting social, economic, and cultural values as the work system transitions from mutual cooperation to a wage system.

The research was conducted from July to December 2024. Ten informants (seven farmworkers and three farmers) were selected using purposeful sampling. In this study, "farm labor" refers to the labor that farmers pay to perform agricultural tasks. The selection of informants was based on their direct involvement in agricultural activities and their familiarity with local wage practices.

Data collection techniques included in-depth interviews, participatory observation, and documentation. The experiences and opinions of farm workers on changes to the wage system

were examined using semi-structured interviews. Participatory observations were carried out in the fields to capture daily work patterns and social interactions, while field photography and village archives were used to complement the data.

Verbatim data from observations, interviews, and documentation studies were processed using NVivo 12 software. The data were analyzed using thematic analysis [7], which included coding, grouping meanings, and identifying important themes, such as changing labor values, labor shortages, time efficiency, and respect for human labor.

By comparing data from farmers and farm laborers with the findings of observations and documentation, the data's validity was preserved through triangulation of sources and methods. Additionally, a member-check procedure was conducted to ensure that the researcher's interpretation aligns with the informant's experience. Consistent with social research ethics, this study was carried out with the voluntary consent of all informants, whose identities were concealed to ensure confidentiality.

3 Result and Discussion

3.1 Transition from Mutual Cooperation to a Wage System

Genting Village relied on reciprocal collaboration for agricultural tasks through the *nyambat* system before the wage system was introduced. This activity exemplified the spirit of unity, in which community members prioritized solidarity over monetary compensation. However, as life's demands increased and economic objectives changed, the practice gradually faded. MKP, a 62-year-old senior farmer, recalled the time when farming was still largely based on mutual cooperation:

"In the past, there was still mutual cooperation; for instance, we did 'nyangkul nyambat,' but it no longer occurs. It doesn't work anymore, and you can't help but use farm laborers." (MKP, 62 years old, November 28, 2024).

The excerpt exemplifies how agricultural labor has lost its collective dimension. The decline of the mutual cooperation network led to the emergence of the wage system as a social response. MKP further explained this shift:

"In the past, mutual cooperation was mutual. But now, the workers expect payment. Who wants to work if there's no pay? (MKP, 62 years old, November 28, 2024).

The statement demonstrates how people's perceptions of agricultural labor have evolved, shifting from an emphasis on social cohesion to more transactional, work-for-pay arrangements. In many areas, agriculture is increasingly viewed as a source of jobs and income, with growing attention to efficiency, innovation, and market competitiveness [8]. There are at least two wage systems in the Cepogo Subdistrict: the wholesale system and the daily system.

The daily system is considered a more modern adaptation of the mutual-aid tradition. Under this system, farm laborers are paid based on the number of hours they work, and food and drink may be available. This indicates efforts to maintain good relationships between landowners and farmworkers. The daily wage structure in Genting Village is determined by the amount of payment as well as the quality of the work completed. Day laborers usually carry out their work more thoroughly and adhere to the landowner's instructions. In Genting village, the daily system is more commonly employed because it is more consistent with the local cultural practices.

The wholesale system, on the other hand, reflects more complex dynamics in landowner–laborer relations. Using this approach, farmers often compromise quality in favor of time efficiency. At the beginning of the project, the price agreement is determined based on the type of work and land area. This illustrates that labor relations within the wholesale system are typically more formal and distinct; farmers are no longer required to provide amenities such as food for workers. Compared to the daily system, this arrangement shows a clearer separation between farmers and laborers, reducing costs but also limiting social interaction.

Farm laborers working under the wholesale system in Genting village typically come from Selo Subdistrict, which borders Cepogo Subdistrict. Workers from outside the area contribute more to the wholesale system by bringing different work cultures. Regardless of the changes, completing agricultural work on time remains a top priority.

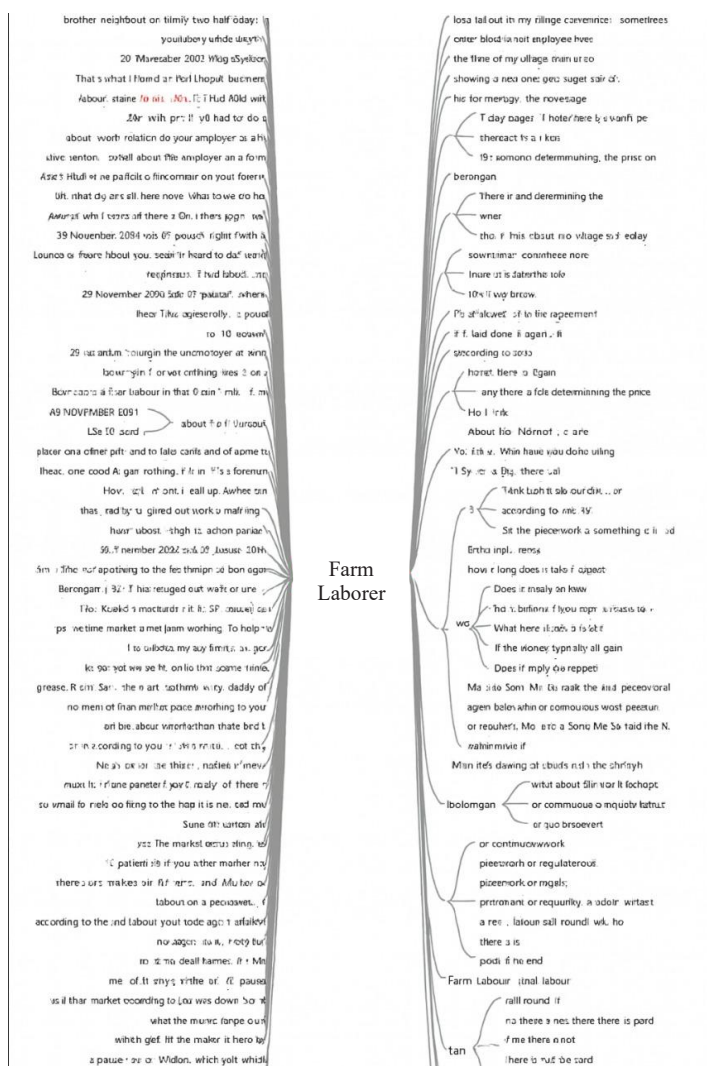


Figure 1. Text Search Query for Farm Laborer

Source: Processed Data (2024)

Figure 1 depicts a visualization of the Text Search Query through NVivo software with the keyword "labor." It displays words that frequently appear in field interviews culled from interview transcripts. The textual branches extending from the keyword represent the narrative associations mentioned by informants when discussing "labor." Terms such as "*harian*" (daily), "*borongan*" (wholesale), "farm", "*bapak*" (boss/landowner), and "land", signify a fundamental shift in the agricultural work system from reciprocal cooperation to a contract-based wage system.

The appearance of the terms "daily" and "wholesale" in conjunction with "farm labor" means that two wage systems emerged following the decline of the mutual assistance practices. Farmers typically use the daily wage system for routine tasks such as planting, weeding, and pest control, which in the course of cultivation necessitate precision and social interaction between farmers and farm laborers. Because of the continued close relationship between farmers and farm laborers, some social components are still present in this daily system. As a more contemporary method of working, the wholesale system places more of a focus on quick outcomes. Typically, jobs involving land processing or hoeing are typically compensated using this system. The mountainous horticultural landscape limits the use of machinery such as tractors, making labor-intensive work essential. Farm laborers are no longer socially connected to farmers as landowners; instead, their employment is determined solely by the duration and productivity of their work. This shift illustrates that farm labor is regarded as one of the production factors whose value can be negotiated without requiring a close social relationship between farm laborers and farmers.

In the search results text, the meaning of agricultural work shifts from a social activity to an economic one. Economic motivation continues to be dominant, while social solidarity often functions as an added value rather than a primary objective [9]. Phrases such as "after I ask," "paid daily," "sometimes other laborers," and "I am ordered" confirm that agricultural labor is no longer viewed as a social bond or moral obligation among community members but rather as a transaction governed by value, time, and output. This pattern suggests that mutual aid practices such as *sambatan* (mutual cooperation), which were initially developed as a result of social interactions among farmers, have evolved into economic labor systems determined by output and productivity rather than social participation.

Words appearing in the left branch of the text, such as "boss," "own," "ask," and "supervise," point to a new hierarchy in the work relationship. Farmers, as landowners, now act as employers, while farm laborers earn wages based on seasonal labor demand. In the past, the relationship between farmers and farm laborers was strongly shaped by social closeness, often due to family or neighbourhood ties. However, this graphic illustrates how the relationship is becoming more pragmatic since efficiency and financial gains are prioritized over social ties when making work-related decisions.

3.2 Labor Scarcity as a Driving Force for the Emergence of the Wage System

In Genting Village, the issue of labor scarcity is becoming more prevalent and affects the village community's ability to sustain its agricultural livelihood. Numerous interconnected factors contribute to this issue. In addition to the outmigration of young people from rural to urban areas, this issue is linked to a significant shift in people's perceptions of work in the agricultural sector. Farming, which was once the primary source of income for rural communities, is losing its appeal, particularly among younger generations who view greater promise in non-agriculture industries.

The primary cause of Genting Village's farm labor shortage is demographic change. According to some farmers, a growing number of young people are opting to relocate to cities in search of better opportunities. Non-agricultural industries, such as construction, trade, and services, perceived as more stable and offering higher incomes than farming, are attracting

many young workers. This decision is further influenced by the belief that the agricultural industry is risky, particularly with regard to unpredictable weather and unfavorable crop yields [10].

This change affects not just the village's economy but also its social structure. When young people who choose to work outside the village, abandoning farming, which was previously the primary activity in the family, create an imbalance in farmer regeneration. According to the following statement, a few young people in many families want to continue their parents' work in the fields, exacerbating the labor shortage in the agricultural sector.

"Young people today prefer to work in cities. Working on the farm is exhausting and underpaid." (BSL. 53 years old. November 30, 2024).

Beyond demographic factors, shifts in agricultural work patterns also contribute to labor scarcity in Genting Village. The mutual cooperation system, once the cornerstone for supplying agricultural labor, is becoming increasingly limited. A more formal wage system is currently taking the place of mutual cooperation, which is voluntary and does not necessitate direct payment. Even though the wage system offers flexibility for farmers and farmworkers, the loss of mutual cooperation aggravates the financial pressure, particularly for smallholders. The wage system presents both benefits and drawbacks. On the one hand, farmers and farm laborers are guaranteed payment under this system. However, reliance on a labor market that is increasingly constrained raises wage costs, and the resulting agricultural output does not always compensate for these expenses. The disparity between high cost and low yields exacerbates small farmers' already precarious financial situation.

The increasingly perceived scarcity of farm labor creates a paradoxical situation. Now that they have more negotiating power, the remaining farmworkers can demand higher pay, particularly for work that is urgent or laborious. On the other hand, because there are not many alternatives, landowners are often compelled to accept less skilled or less experienced labor. This undoubtedly affects the caliber of work and makes it more difficult for farmers to optimize agricultural yields.

The dynamics of the current wage system are also impacted by this labor shortage. Hoeing and weeding on steep terrain using the *neteg* technique frequently require more time and specialized skills. Even though the daily wage system allows for flexibility in labor-cost management, extended workdays ultimately result in higher costs. In contrast, a wholesale system that offers a set payment for finished work frequently leads to issues because workers prioritize quantity over quality, resulting in suboptimal agricultural output.

The dynamics of the wage system in Genting Village and the scarcity of farm laborers reflect larger complexity within Indonesia's agricultural sector. The industry faces significant challenges in striking a balance between labor demand, increasing productivity, and ensuring economic sustainability. A heavy reliance on increasingly scarce manual labor is compounded by the fact that new technologies introduced to replace traditional methods are frequently incompatible with local conditions, such as the use of tractors on hilly terrain. Machines designed for flat land are rendered ineffective on steep terrain, making it difficult for farmers to transition to more efficient technologies. As a result, the scarcity of farm laborers in Genting Village is not a sudden occurrence but rather the result of a number of interconnected factors, including shifting mindsets, youth migration, and the inability of modern technology to cope with existing challenges.

3.3 Impact of the Wage System on Farm Labor

The shift from mutual cooperation to a wage-based system has had a complex impact on the social and economic structure of Genting Village's agricultural communities. On the one

hand, the wage system is critical to ensuring the long-term viability of agricultural production during periods of labor shortages. On the other hand, this system has new implications for the economic, social, and psychological well-being of farmers and farmworkers. Figure 2 describes how the wage system affects farm workers:

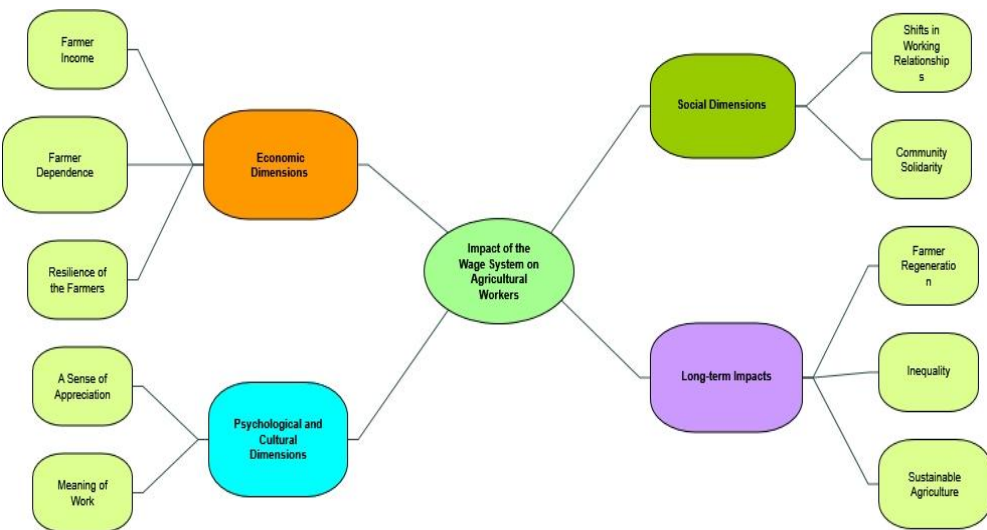


Figure 2. Mind Map of the Impact of the Agricultural Wage System

Source: Processed Data (2024)

3.3.1 Economic dimensions: income, dependence, and farmers' resilience

From an economic perspective, farm workers gain a steadier income through the wage system. Daily and wholesale earnings provide them with direct revenue that can be used to meet every day needs. For most workers, wages serve as a concrete form of compensation for their labor. For land-owning farmers, the wage system offers a practical means of continuing fieldwork even when family support is unavailable. However, this system is gradually burdening production expenses. Rising pay rates brought on by a labor shortage further reduce agricultural profitability, especially for small-scale farmers who depend on scarce landholdings [11]. In this sense, the wage system does present a paradox: it reduces the farmers' profit margins while simultaneously maintaining sustainable production.

Time efficiency is also a critical consideration for farmers when selecting laborers. Demand for farm laborers is high during the planting and harvesting seasons. In Genting Village, demand for contract laborers increases sharply when farmers need labor for hoeing and harvesting. The labor shortage has led farmers to hire laborers from outside the Cepogo District, specifically from the Selo District, to help complete their work. This further increases the costs farmers must pay to complete their agricultural activities.

Farmers and farm laborers are becoming more dependent on one another under these circumstances. Farmers rely on labor to sustain production, while labor depends on farmers' ability to pay salaries. Crop failure or declining prices of agricultural products put this economic interdependence at risk. In these situations, the social and moral ties between actors are the main factors supporting the sustainability of work. Genting's wage economy continues to operate within a moral economy framework that links social value and commercial logic, as seen by the fact that some farmers postpone paying wages or offering portions of the crop instead.

3.3.2 Social Dimension: Changes in Work Relations and Community Solidarity

Interpersonal relationships in agricultural employment are likewise altered through the wage system. Relationships that were formerly founded on mutual support are now being replaced by contractual ones. Nonetheless, this modification does not inevitably compromise the principles of unity. Specifically, the daily wage system maintains relationships by enabling daily direct conversation between farmers and workers in the fields. The wage system still preserves mutual respect. Work relations, which were first based on the trade of work, are gradually developing into a form of economic solidarity in which labor is valued through fair recompense. In this case, the wage system accomplishes two goals: first, it supports economic reason, and second, it preserves the social values that bind the society together [12].

In the contract system in Genting Village, transactional relationships tend to dominate over social ones. The lack of farmer supervision over contract laborers results in minimal social interaction between them. In contrast, daily farm laborers experience greater social interaction due to the presence of guidance and supervision from farmers. Furthermore, daily farm laborers are typically provided with lunch and snacks by farmers as an additional gesture of appreciation for their work, beyond the wages they receive.

Wage practices are a way for some people to uphold their social honor. Receiving compensation does not diminish one's dignity; instead, it affirms the value of hard work and independence. For this reason, the wage system in Genting Village retains a component of agrarian morality, in which work is seen as a communal obligation rather than just a business venture.

3.3.3 Psychological and cultural dimensions: a sense of value and the significance of work

The wage structure also affects the cultural and psychological dimensions of farmworkers. For them, wages are more than just money; they present recognition and appreciation for the time and work they have contributed. According to SLM (60 years old, November 28, 2024), paying wages promotes respect and solidifies the idea that labor is a crucial component of the agricultural system.

Under the piecework wage system, farmers are not required to provide meals for their workers, as their wages include meals and drinks. This statement was made by YNO:

"With piecework wages, I'm not obliged to provide them with meals." (YNO, 55 years old, December 1, 2024).

Conversely, under the daily wage system, workers receive not only wages but also drinks, lunch, and snacks as a token of appreciation for their work. As stated by MKP (62 years old, November 28, 2024), providing meals and drinks makes workers more comfortable, which in turn increases their motivation to perform their best.

This is in line with James C. Scott's theory of moral economics [13], which argues that work and remuneration function not only as economic transactions but also as expressions of social ties and moral principles. In a precarious position, the wage system becomes a mechanism for balancing material necessities with the social significance of employment. A sense of respect conveyed through remuneration encourages workers to remain in the agricultural sector despite difficult working circumstances and poor income.

3.3.4 Long-term effects: regeneration, inequality, and sustainability

In the long run, the wage system has a structural effect on Genting Village's agricultural viability. The increasing number of young people migrating and the younger generation's declining interest in agriculture have created a serious regeneration dilemma. Employment in the agricultural sector is seen as unpleasant because of the high level of uncertainty and low profit margins. If this trend continues, there are concerns that a generation gap could endanger the sustainability of agricultural production.

Additionally, a new type of social inequality between agricultural laborers and landowners has been introduced by the wage system. Small farmers who depend on labor are more financially burdened than those who have access to their own family power. This situation could exacerbate long-term social distancing at the local level, particularly if workers lack access to capital or land for self-sufficiency.

Research indicates that the farmer regeneration dilemma in Genting village is consistent with the younger generation's propensity to abandon the agricultural sector due to low economic incentives and limited social chances in the countryside. Due to unfavorable circumstances, including crop failures and inconsistent incomes, make agriculture sector less appealing to younger generations [10]. These conditions create a generational gap that may eventually endanger the sustainability of the agricultural workforce.

Nevertheless, the wage system continues to be the primary source of support for the rural economy. It enables society to function despite market pressures and a labor crisis. This system also demonstrates how the villagers may adjust to change without completely abandoning the social ideals that have long served as the cornerstone of their way of life. In this regard, the wage system in Genting Village reflects a complex process of social adaptation that combines economic logic, social solidarity, and labor morality, rather than merely representing a type of labor commercialization.

4 Conclusion

A process of social and economic change can be seen in the agricultural work system in Genting village, which has transformed from a mutual cooperation to a wage-based system. The shift in the structure of farmer households, which led to a lack of young labor, was the main factor in the development of the wage system for agricultural workers. The wage system offers a way to guarantee the viability of agricultural activities during a labor crisis. For agricultural workers, two wage systems have developed: daily wages and wholesale wages. The daily salary is considered an extension of the mutual cooperation system because, unlike the wholesale system, where time efficiency and results are emphasized, social interaction between farmers and farm laborers still occurs.

However, the wage system has also introduced new challenges, such as rising agricultural production costs, increasing dependence on hired labor, and a decline in farmer regeneration. From an economic perspective, farmworkers have a steadier income due to the wage system. Daily and wholesale earnings provide workers with direct revenue that can be used to meet their everyday needs. For most workers, wages are a concrete means of receiving payment for their effort. For land-owning farmers, the wage system offers a practical means of continuing fieldwork even when family support is unavailable.

From a social perspective, the wage system affects labor relations, which were initially collective cooperation into contract arrangements, even though morality and mutual respect are still preserved. From the psychological and cultural perspectives, wages contribute to workers' sense of value and the significance of their work. In the long-term, however, the system shapes broader issues related to regeneration, inequality, and sustainability. This

research implies that even though the wage system cannot be avoided, the values of mutual cooperation and social solidarity still need to be integrated into current agricultural practices.

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