

===== <b>Journal of Social Science</b> =====	©Journal of Social Science Vol. 7 No. 4 July 2024 pp. 66- 77 Faculty of Social Sciences Begum Rokeya University, Rangpur ISSN 2305-1035 http://doi.org/-----
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## **Determinant Factors of the Contractual Sharecropping Method in the North-Western Part of Bangladesh**

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### **Abstract**

*Contractual sharecropping method is a common practice among the farmers in the north-western part of Bangladesh. This study is being done in two upazilas, namely Gangachara and Mithapukur, in Rangpur, a north-western district of Bangladesh. Farmers who practiced the contractual sharecropping method were compared to farmers who didn't practice this method in this paper. Under mixed method approach, the quantitative part this study is based on 95 households that were chosen at random and there are 4 KIIs along with 2 FGDs were performed for the qualitative part. A logistic regression model is used to figure out the determinants of contractual sharecropping method. It is identified that farmers with more land are less likely to be contractual sharecroppers. When per-day working duration increases in the agricultural sector, they are also less likely to be sharecroppers. Compared to these two upazilas, farmers of Gancharara upazila are more likely to be sharecroppers than farmers of Mithapukur upazila. On the other hand, boro rice productivity, along with the experience of the farmer in accordance with their age, has no impact on practicing contractual sharecropping method. A cross-case matrix represents the qualitative result, synthesis the quantitative result. The crisis of profit sharing and considering it a secondary livelihood option are the main reasons to produce an inadequate amount of crops under this method.*

**Key Words:** Contractual sharecropping, agriculture, rural, north-western Bangladesh

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## **1. Introduction**

In the agrarian landscape of Bangladesh, sharecropping remains a prevalent and intricate system of land tenure, particularly in the north-western region. This part is dominated by a fragile agro-ecosystem, where populations largely working in agriculture are highly vulnerable from a climate perspective, and thus rural poverty could be exacerbated due to the negative impacts of climate change on agricultural production and a general increase in food prices and the cost of living. In this vulnerable situation there are different types of sharecropping methods are applied, that cause different level of production in agricultural sector. Sharecropping, as a form of agricultural production arrangement, plays a significant role in shaping rural livelihoods and economic dynamics (Basu, 1994). Amidst the various methods of sharecropping practiced, the contractual sharecropping method stands out as a focal point for examination due to its nuanced contractual arrangements and implications for both landowners and tenants.

Historically it is experienced that several man-made reasons regarding crop sharing challenged agricultural sector of Bangladesh, even some of the revelations including wars (e.g., *Tebhaga Movement*) were held between Jamindar (land owner) and peasant (Rahaman, 2023). This confronts situation still belong between two parties of crop production. This paper embarks on an exploration journey into the realm of sharecropping, aiming to delve deeper into the determinants that influence the adoption and perpetuation of the contractual sharecropping method in the north-western part of Bangladesh. Through a meticulous analysis of existing literature, empirical data, and field observations, this study endeavors to shed light on the multifaceted factors that underpin the prevalence and sustainability of contractual sharecropping arrangements in this region.

The objectives of this study are twofold. Firstly, it seeks to comprehensively examine the running situation of contractual agreements, rights, and obligations among landowners and tenants. Secondly, it aims to discern the determinant factors that drive the adoption and perpetuation of the contractual sharecropping method, ranging from socio-economic dynamics to land ownership along devotion of farmers.

By unraveling the intricate web of factors that influence the contractual sharecropping method, this research endeavors to contribute to a deeper understanding of agrarian dynamics in

Bangladesh and provide insights that could inform policy interventions aimed at enhancing the efficiency and equity of land tenure systems in the region.

In the subsequent sections of this paper, we will delve into the historical evolution of sharecropping, examine the different methods of sharecropping practiced in the north-western part of Bangladesh, and rigorously analyze the determinant factors that shape the contractual sharecropping method, thereby enriching our understanding of this pivotal aspect of rural livelihoods.

## **2. Objectives**

The main objectives of this study are:

- to explore the existing condition of contractual sharecropping method.
- to identify the determinant factors of contractual sharecropping method.

## **3. Literature Review**

### **3.1 Sharecropping**

Sharecropping is a prevalent agricultural practice where a landowner allows a tenant to use the land in exchange for a share of the crops grown (Pramono, 2020). Despite its historical roots and economic inefficiencies, sharecropping persists due to factors like high transaction costs, risk aversion, and institutional uncertainties (Roy & G.V, 2018). In regions like Sambirejo village in Ngawi and Khulna District in Bangladesh, sharecropping agreements are often informal, with profit-sharing ratios determined based on planting seasons rather than capital contributions (Lozano Guerrero & Bello Fierro, 2019; Mukhamedova & Pomfret, 2019). Studies show that sharecroppers may be less efficient compared to landowners, with differences in productivity and motivation influenced by factors like land rent and input costs (M. Ahmed & Billah, 2018).

### **3.2 Contractual Sharecropping**

Contractual sharecropping involves agreements between landowners and tenants where the tenant cultivates the land in exchange for a share of the resulting harvest or profits. Traditional sharecropping contracts, like the Minangkabau paduo and patigo contracts, have been analyzed for their compliance with Sharia law and economic efficiency (Ridwan & Vania, 2023). The choice

between sharecropping and fixed-rent contracts is influenced by factors like access to credit and risk exposure, with credit programs in Bangladesh showing a shift towards fixed rent contracts with increased credit access (Stabler, 2020). In post-conflict Colombia, sharecropping is seen as a viable option for land access and distribution to prevent violence, based on historical and legal analyses (Ding & Zhou, 2021). These insights highlight the complexities and considerations involved in the selection and modification of sharecropping contracts.

### **3.3 History of Contractual Sharecropping**

Contractual sharecropping has a rich historical background across different regions. In Brazil, during the transition from slavery, sharecropping contracts were offered to European laborers to secure a stable labor supply through credit-labor interlinkage, facilitating Brazil's integration into the global labor market (de Souza, 2019). Sharecropping agreements have been viewed as a workable approach to land distribution and access in Colombia during post-conflict times, with the goal of averting violence and advancing fair land ownership. Sub-Saharan Africa showcases variations in sharecropping arrangements, influenced by natural risks, transaction costs, and court interventions to address unequal bargaining power between tenants and landowners (Lozano Guerrero & Bello Fierro, 2019). Contrary to classical economists' beliefs, sharecropping inefficiencies exist, especially in European vineyards, where historical contracts evolved to address compensation issues but faced challenges with capital-intensive viticulture (Boadu, 2016).

### **3.4 Contractual Sharecropping in Bangladesh Perspective**

Contractual sharecropping in Bangladesh involves complex socio-economic factors influencing land leasing decisions. Landlords in Bangladesh hold significant power in informal tenancy markets, often choosing between sharecropping and fixed rent contracts based on their attributes (S. Ahmed & Ahmed, 2011). Technological advancements and institutional innovations in land and labor contracts have been observed in irrigated agriculture areas, indicating a shift towards more profitable arrangements (Zamil & Cadilhon, 2009). The 1984 Land Reform Act influenced the expansion of high-yielding variety (HYV) rice farming through fixed land rent regulations, but over time, tenants' returns decreased due to rising input prices (Akteruzzaman et al., 1997). This highlights the need for fairer distribution of returns between landowners and tenants, suggesting adjustments to land rent percentages to protect land-poor tenants (Zaman, 1973).

### **3.5 Deriving Factors**

Determinant factors shape the dynamics and design of sharecropping contracts across diverse agricultural settings. Religiosity, transparency, and production factors exert significant influence, particularly evident in East Java, where these elements play crucial roles in contractual agreements (Boadu, 2016; Arief et al., 2022). Additionally, the size of farms offered by landowners, capable of supporting sharecroppers' families full-time and allowing for diversified production, minimizes risk and impacts contract formation. Harvest division complexities, preferences for payment methods, and supervision levels further shape these agreements, with supervised tenants generally exhibiting higher productivity (Carmona & Simpson, 2012).

Courts are adapting customary contracts to modern conditions, recognizing the power differentials between tenants and landowners and addressing unequal bargaining power. In French wine production, factors such as farm size, harvest division complexities, and landowner payment preferences are determinant in contractual choice, influenced by vertical coordination (Simpson, 2012). Moreover, landlord supervision is pivotal, impacting productivity levels, with monitoring frequency and cost influencing supervision intensity and incentive structures.

Empirical data from China highlights additional determinants, such as the tenant's age (with a negative effect), social security, soil fertility, and the number of plots (with positive effects). In surface water management, factors like leader and manager abilities, land design, canal systems, and opportunity costs influence contractual forms chosen in village settings. Sharecropping contract choices also reflect considerations of risk-sharing and moral hazard, as evidenced in rural Bangladesh, where contracts serve not only for risk-sharing but also address moral hazard concerns (Jacoby & Mansuri, 2009; Wang et al., 2016).

Overall, the intricate interplay of these factors underscores the complexity of sharecropping arrangements and contractual choices in agricultural contexts worldwide.

## **4. Methodology**

Two upazilas are randomly selected from Rangpur district among eight upazilas, namely Gangachara and Mithapukur. Gangachara and Mithapukur are located on the northern and southern sides of Rangpur Sadar upazila, respectively. Both upazilas are agriculture-prone areas, with 76.04% of people involved in agriculture in Gangachara and 69.47% in Mithapukur. Extreme weather is a feature of both upazilas. Population density (Gangachara: 1105/square-km,

Mithapukur: 985/square-km), literacy rate (Gangachara: 43.2%, Mithapukur: 46%), etc., are similar in nature for these two upazilas (Banglapedia, 2024a; Banglapedia, 2024b).

Primary data were collected under mixed-method approach consists of qualitative and quantitative data. This data was collected from 1<sup>st</sup> march to 7<sup>th</sup> march in 2023. This time was selected to avoid bias observation regarding agriculture just before or after the harvesting period. We randomly talked to 95 households (52 from Gangachara and 43 households from Mithapukur) to conduct our quantitative data. In addition to quantitative data, 2 FGDs and 4 KIIs were also used to gather qualitative data. Data collectors interviewed two types of farm households: those who practiced contractual sharecropping and those who didn't. A structured questionnaire was prepared for quantitative data, and a checklist was organized for qualitative data. Variables are described in table 1.

Table 1: Description of the variables

Name of the variables	Continuous/binary	Description of the variables
Practicing contractual sharecropping method (sc*)	Binary	1 = yes 0 = no
Age of the farmer (age)	Continuous	In terms of year
Amount of own cultivated land (o_land)	Continuous	Total amount of cultivated land of a household in terms of decimals
Per day working hour of a farmer (w_dur)	Continuous	Per day working duration in terms of hour
The upazila of a farmer (up)	Binary	1 = Gangachara 0 = Mithapukur
Production of boro rice (boro_prod)	Continuous	Amount of boro rice production in terms of ton (1000 kg)

\*Dependent variable

Due to the binary nature of dependent variable a logistic regression model is used to figure out the role of independent variables on dependent variable.

$$L_i = \ln\left(\frac{P_i}{1 - P_i}\right) = \beta_1 + \beta_2 \text{ age} + \beta_3 \text{ o\_land} + \beta_4 \text{ w\_dur} + \beta_5 \text{ up} + \beta_6 \text{ boro\_prod} + u_i$$

$P_i = 1$ , if a household practice contractual sharecropping method

$P_i = 0$ , if a household did not practice contractual sharecropping method

To analyze qualitative data cross-case matrix has been built to understand the validity of quantitative analysis. We have answered the first objective of this study by qualitative data and second one by quantitative data.

## 5. Result and Discussion:

The data provides insights into the characteristics of households' heads and their engagement in contractual sharecropping in the studied region. On average, the household heads are approximately 45.45 years old, with a standard deviation of 13.195, indicating some variability in age within the sample. In terms of land ownership, households own an average of 77.33 decimals of land, with a relatively high standard deviation of 90.286, suggesting considerable diversity in land ownership among the households surveyed. The average working duration per day among the household heads is 8.74 hours, with a standard deviation of 2.09, indicating relatively consistent working hours across the sample. Regarding agricultural production, the average boro production is 2.22 tons, with a standard deviation of 4.400, indicating significant variability in production levels among the households.

Regarding the geographical distribution of the sample, the majority of households (54.74%, or 52 out of 95) are from Gangachara Upazila, while the remaining households are from Mithapukur Upazila. Finally, in terms of agricultural practices, nearly half of the surveyed households (49.47%, or 47 out of 95) practice the contractual sharecropping method. This suggests that contractual sharecropping is a prevalent agricultural arrangement in the region, with implications for understanding the dynamics of agricultural labor and land use among households in the north-western part of Bangladesh.

Table 2: Result of logistic regression model

Variables	Determinant factors
age	-0.00857 (0.0185)
o_land	-0.0150*** (0.00462)
w_dur	-0.211* (0.126)
up	0.846* (0.479)
boro_prod	0.000729 (0.0000702)

Constant	2.603* (1.501)
Pseudo R-square	0.2011
Prob > chi-square	0.0001

N. B.: Standard deviations are in parenthesis; \*\*\*, \*\*, and \* represent 1%, 5%, and 10% level of significance respectively.

The overall statistical significance of the logit model (Table 2) is supported by a small p-value, indicating that the regression model effectively explains the variation in the adoption of contractual sharecropping among farmers in the north-western region of Bangladesh. The analysis investigates the determinant factors influencing the adoption of contractual sharecropping methods among farmers in the region. The dependent variable, "Practicing contractual sharecropping method," is assessed against several independent variables. Firstly, the ownership of cultivated land emerges as a significant factor, indicating a negative relationship with the likelihood of engaging in contractual sharecropping. Farmers with more land holdings are less inclined to participate in such arrangements. A similar result has been observed by Simpson (2012). Additionally, the duration of work per day exhibits a negative association with contractual sharecropping, albeit with less certainty, suggesting that farmers dedicating more time to their own land are less likely to opt for contractual arrangements. That is why contractual sharecropping as well as sharecropping is considered an inefficient method of production by earlier researchers (e.g. Colman and Young, (1989)). Conversely, farmers of Gangachara practice this method of cultivation more than the farmers of Mithapukur, implying that regional factors play a role in shaping this agricultural practice (as stated by Basu (1994)). However, neither the age of the farmer nor the production level of boro rice significantly influences the decision to engage in contractual sharecropping. That means agricultural experience has no role in the contractual sharecropping method in our studied area. Though boro rice production is considered the main crop of this area, it is not a playmaker for decision-making regarding the studied method.

Table 3: A cross-case matrix

	Gangachara	Mithapukur
Gangachara	Communication: Poor Land owner support: Inadequate Natural resources: Not bad Farm size: Too small	



Mithapukur	Communication: MP > GA Land owner support: MP = GA Natural resources: MP = GA Farm size: MP > GA	Communication: not so poor Land owner support: Inadequate Natural resources: Not bad Farm size: Small
N.B.: GA and MP denote Gangachara Upazila, and Mithapukur Upazila respectively. '>' and '=' sign shows the better off, and similar position respectively.		

A cross-case matrix (Table 3), based on qualitative data, reflects a similar situation to the quantitative data. The principal diagonal of the matrix (1×1 and 2×2) shows the relative issues (e.g., communication from the Sadar Upazila, input support from the landowner, etc.) of contractual sharecropping in both upazilas, and (2×1) shows the comparison between these two Upazilas. Farmers reported that their own engagement leads to contractual sharecropping, bypassing other methods. However, landowners aim to keep themselves in a risk-free zone due to natural and economic crises. Only a share of profit is their requisition. Moreover, people from other professions who do not own land, such as small businessmen, carpenters, etc., practice this method as their secondary livelihood option and try to meet their family's food demands instead of focusing on profit-making. Due to this secondary option, they have less attention compared to full-time farmers. Under the sustainable rural livelihood framework, this type of approach is considered the second option in village life, whereas extensification or intensification is primary (Scoone, 1998).

**A case:**  
 Mr. Jaynal Hossain, a thirty-nine years old farmer studied to only class eight, lives in Gangachara Upazila. He owns a very few numbers of lands (0.2 acreage) and practices contractual sharecropping method for sixteen years. His current amount of land tenancy is 0.66 acreage. Land owners do not want to participate to bear input cost as well as production cost. It is a demotivate force for him to share only the profit. That is why he has no positive intension to work more on the land of others.

The analysis of contractual sharecropping among farmers in the north-western region of Bangladesh reveals nuanced insights from both quantitative and qualitative perspectives. On a qualitative note, the primary drivers behind the adoption of contractual sharecropping emerge as farmers themselves, motivated by the need to mitigate risks and secure land access. In contrast, landowners prioritize risk mitigation and profit-sharing, while individuals from non-agricultural backgrounds utilize contractual sharecropping as a supplementary livelihood strategy to fulfill family food requirements.

## 6. Conclusion

This study provides a detailed examination of contractual sharecropping in the studied area of Bangladesh, uncovering specific determinants, prevalence rates, and implications for rural livelihoods. Through quantitative analysis, it is revealed that land ownership negatively correlates with the adoption of contractual sharecropping, emphasizing the importance of land tenure in shaping agricultural arrangements. Furthermore, the duration of daily work emerges as a significant factor influencing farmers' decisions, highlighting the interplay between labor allocation and agricultural practices. Regional disparities are evident, with Gangachara exhibiting a higher prevalence of contractual sharecropping compared to Mithapukur, underscoring the influence of local context on agricultural systems. Notably, neither the age of the farmer nor the production level of boro rice significantly influences the adoption of contractual sharecropping, indicating the complexity of decision-making in agricultural production. Qualitative insights reaffirm the pivotal role of farmers as primary drivers, motivated by risk mitigation and land access, while landowners prioritize risk management and profit-sharing. Additionally, individuals from non-agricultural backgrounds utilize contractual sharecropping as a supplementary livelihood strategy, reflecting the diverse socio-economic landscape of the region. In light of these findings, policymakers are urged to address barriers such as access to loans, irrigation, and inputs to enhance the efficiency and equity of land tenure systems, promoting sustainable agricultural development and rural well-being in Bangladesh's north-western region.

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