



## **Wage Employment in Sugarcane Outgrower Schemes in Kilombero Tanzania: A Gender Perspective**

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**Abstract:** This study investigated wage employment within sugarcane outgrower schemes in Kilombero Valley, Tanzania, with a specific focus on gender perspectives. Employing the case study design, the study involved the population of 3,987 with a sample size of 399 drawn from four villages within the Kilombero Valley. Data underwent descriptive analysis, utilising percentages and cross-tabulation techniques. Furthermore, the Chi-square ascertained the association between gender of the household heads and their involvement in labour market practices. The findings highlight that female-headed households show a higher tendency towards engaging in selling labour while male-headed households are more likely to hire labour. In light of these findings, this study suggests that to address these disparities effectively, gender-sensitive interventions in the agricultural sector are necessary, including providing women with equal access to resources, implementing policies promoting gender equality and establishing support networks to empower women in agriculture.

**Keywords:** Contract farming; sugarcane out-grower schemes; wage employment; gender; male-headed households, female-headed households.

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### **Introduction**

Out-grower schemes, often used interchangeably with contract farming, are characterised as contractual partnerships between growers and companies for agricultural products (Martiniello, 2017; Prowse, 2012; and Holtland, 2017). This agricultural mechanisation is recognised as a valuable tool for providing wage employment opportunities for rural households in developing countries (World Bank, 2017). Meemken and Bellemare (2019) and Deininger and Xia (1916) emphasised the significance of contract farming's impact on the labour market, especially in areas

where employment opportunities for the rural population are generally constrained. The scholars highlighted that contract farming plays a pivotal role in fostering the rise of middle-class farmers, who commonly depend on hired labour. Kirui (2019) reports that in African countries where land expansion was previously limited, agricultural commercialisation, with contract farming being one of them, has resulted in scale effects. These effects are seen through an increase for cropland cultivated, input intensification, higher productivity and increased use of hired labour.

Apart from the advantages of contract farming for wage employment, some studies have suggested that more research should be conducted on gender-based equality. Maertens and Swinnen (2009) reported that gender aspect in the labour market in contract farming studies has received relatively little analytical attention. Spielman and Zambrano (2016) as well as Matsumoto et al. (2015) emphasised that the interaction between contract farming and wage employment is broad and complex and it should be studied in specific contexts. Furthermore, Maertens and Velde (2017) argued that modernisation of food supply chains through contract farming has given women an extremely important role. Therefore, gender equality should be given more emphasis.

This study investigated the gender gap in the labour market within the sugarcane outgrowers' schemes in Kilombero Valley. Since 1998, there have been notable changes in the outgrowers' scheme, including an increase in the number of outgrowers from 2400 to 8000, expansion of sugarcane land from 4,500 to 16,000 hectares and a rise in sugar production from 30,000 to 158,070 metric tonnes (Sugar Board of Tanzania, 2017). Recent studies (Isager et al., 2021; Sulle, 2020) have linked changes in contract farming to positive effects on employment for local households. However, a gap still exists in these studies as they did not address gender issues. In this context, this study investigated wage employment within sugarcane outgrower schemes in Kilombero Valley, Tanzania, with a specific focus on gender perspectives.

## Literature Review

Literature on contract farming and gender issues in the labour market highlights some important issues worth noting. It indicates that contract farming has mechanised agriculture by replacing manual labour with machinery, thereby making certain tasks less physically demanding. This has opened up opportunities for women to participate in agricultural activities traditionally dominated by men, as they may now be able to operate machinery and perform tasks previously inaccessible to them (FAO, 2010). Maertens and Swinnen (2009); Kruijssen et al. (2018); Deere (2005) and UNCTAD (2019) asserted that development of high-value agriculture production and agro-processing for export has supported the growth in women's agricultural wage labour. The new forms of contract farming organised in supply chains for export-oriented crops and agro-processing have created better-paying employment opportunities for

women. Deere (2005) propounded that the large-scale incorporation of women in the packing stage of non-traditional agro-export production may be one of the most important developments for female employment over the past few decades.

Literature further suggests that employment in contract farming should be viewed depending on the type of crop and activities being performed (Maertens and Velde, 2017; Reynolds, 2002 and Oya and Pontara, 2015). Traditional crops such as sugarcane, bananas, and rice employ more men than women. This is due to the nature of the activities that are performed, which are considered to be masculine. On the other hand, non-traditional crops such as fruits, flowers and vegetables hire more women than men. A study by UNCTAD (2019) found that in countries with export-oriented, high-value agriculture, women make up at least half of the workforce. These countries are like Chile, Ecuador, Guatemala, Kenya, India and South Africa.

Additionally, literature on contract farming and gender issues in developing countries' labour markets shows a wage disparity between men and women. A study by Shimeles et al. (2018) shows that although wages are typically low, women are typically paid less than men. This is particularly true in the global value chains for fruits, vegetables and fisheries, as well as classic export commodities like coffee, cotton and cocoa. Depending on the country and industry, the salary gap between men and women in rural agriculture in Africa is estimated to be between 15% and 60%. One reason is that women are underrepresented in higher-value-added tasks and activities, limiting their ability to capture benefits throughout the value chain.

Despite the increased number of women in contract farming wage employment, literature shows that they are still low compared to their male counterparts. This is due to limited control over the allocation of labour resources (Osabuohien et al., 2019). According to ILO (2018), women make up a majority of the self-employed farmers who make up more than half of the rural workforce in sub-Saharan Africa. In many cases, women work as contributing family members while men work on their own accounts. This suggests that women frequently lack the time to work as wage workers. Danquah et al. (2017) and Bluwstein et al. (2015) argued that women play an important role in agricultural activities in sub-Saharan Africa; however, they are constrained by family obligations,

limited access to finance and limited ownership of productive resources.

In summary, literature on contract farming and gender issues illuminates evolving dynamics in developing countries' labour markets. While contract farming has mechanised agriculture by replacing manual labour with machinery, creating new avenues for women to engage in traditionally male-dominated agricultural activities, disparities persist in their participation across different crops and tasks. Furthermore, women receive lower wage rates compared to their male counterparts.

## **Methodology**

This section introduces the methodological issues related to this study, including study design, population and sampling, instruments used in data collection, validity and reliability, statistical treatments of data and ethical considerations.

### **Design**

This study adopted a case study design, chosen for its suitability in offering both a comprehensive overview of gender issues in the labour market within outgrower schemes and a nuanced perspective specific to each village.

### **Population and Sampling**

The total population consists of 3,987 households engaged in sugarcane activities distributed across Ruhembe (1,211), Kitete (952), Nyamvisi (546) and Kidogobasi (1,278). The sample size of 399 households, including 287 male-headed and 112 female-headed, is distributed across the villages (122 from Ruhembe, 95 from Kitete, 55 from Nyamvisi and 128 from Kidogobasi). The sample size was determined based on the principle that a descriptive study should encompass at least 10% of the surveyed population. This guideline is considered crucial, particularly when comparing characteristics between different groups (Conroy, 2017; Alreck and Settle, 2019).

The composition of the sample size was determined using a stratified random sampling technique. This technique ensured a comprehensive representation of the population under study in all villages. The villages served as primary strata, with further stratification within each village, including hamlets, based on the gender of household heads. Random sampling within each stratum ensured a representative selection of households, resulting in the required sample size.

## **Research Instruments**

The researchers collected data through a questionnaire. The questionnaire addressed the socio-economic attributes of households with a specific focus on gender and their involvement in the labour market, including activities such as selling and hiring labour.

## **Validity and Reliability**

The study demonstrates validity through its careful questionnaire design, which accurately measured socio-economic attributes, particularly focusing on gender dynamics and labour engagement within sugarcane outgrower schemes. Utilising descriptive analysis, cross-tabulation, and chi-square tests, the study draws meaningful conclusions about gender disparity in wage employment. The study's reliability stems from consistent data collection and analysis methodologies. The questionnaire design and implementation maintained uniformity in responses. Statistical techniques like chi-square tests uphold methodological rigor. The study established confidence in its conclusions regarding gender disparity in wage employment within sugarcane outgrower schemes.

## **Treatment of Data**

Data was analysed using descriptive analysis by presenting the socio-economic attributes of households, through frequency and percentage. The cross-tabulation analysis compared the proportions of male and female-headed households engaged in labour selling and hiring. Furthermore, a chi-square test of independence ascertained whether a significant association exists between the gender of the household head and their inclination to engage in labour selling and hiring.

## **Findings and Discussion**

This section presents results of the study. It begins with presentation of socio-economic factors of respondents and then moves into the analysis of data.

### **Socio-Economic attributes of households**

This section presents an overview of key demographic variables related to age, household size, and level of education among female and male-headed households, as well as the overall distribution across the entire sample.

Table 1 indicates a predominant presence of household heads in the 45-60 age category for both females (40.2%) and males (43.2%). This observation implies that participation in agricultural labor

market activities is predominantly among individuals in the more mature age group. In terms of household size, a notable majority (60.2%) falls within the 4-6 adults category, with a higher prevalence among male-headed households (64.1%). Additionally, the distribution of education

levels highlights a higher prevalence of individuals with primary education among both female (61.6%) and male (59.2%) household heads. This indicates that involvement in sugarcane labor market activities is not predominantly centered among those with higher levels of education.

**Table 1. The Demographical Attributes of Households**

Variable	Categories	Female	Male	Total
Age of the household head	15-30	11 (9.8%)	21 (7.3%)	32 (8%)
	31-44	42 (37.5%)	98 (34.2%)	140 (35.1%)
	45-60	45 (40.2%)	124 (43.2%)	169 (42.3%)
	61-75	13 (11.6%)	44 (15.3%)	57 (14.3%)
	75+	1(0.9%)	0	1 (0.3%)
Total		112 (100%)	287 (100%)	399 (100%)
Household size (number of adults)	1-3	19 (16.9%)	45 (15.7%)	64 (16%)
	4-6	56 (50%)	184 (64.1%)	240 (60.2%)
	7-9	32 (28.6%)	55 (19.2%)	87 (21.8%)
	10+	5 (4.5%)	3 (1%)	8 (2%)
Total		112 (100%)	287 (100%)	399 (100%)
Level of education	Primary Education	69 (61.6%)	170 (59.2%)	239 (59.9)
	Secondary Education	14 (12.5%)	32 (11.2)	46 (11.5%)
	Tertiary Education	2 (1.8%)	15 (5.2%)	17 (4.3%)
	Other qualifications	5 (4.5%)	14 (4.9%)	19 (4.8%)
	Never Attended School	22 (19.6%)	56 (19.5%)	78 (19.5%)
Total		112 (100%)	287 (100%)	399 (100%)

**Table 2. Gender of the Household Head and Selling of Labour**

Gender of the Household head		Sell labour		
		No	Yes	Total
Female	Count	23	89	112
	% within gender of the household head	20.5	79.5	100.0
Male	Count	152	135	287.0
	% within gender of the household head	53.0	47.0	100.0
Total	Count	175	224	399
	% within gender of the household head	44.0	56.0	100.0

**Table 3. The Chi-square test results**

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	34.401a	1	.000
Continuity Correctionb	33.097	1	.000
Likelihood Ratio	36.506	1	.000
Linear-by-Linear Association	34.315	1	.000
N of Valid Cases	399		

a 0 cells (0.0%) have expected count less than 5. The minimum expected count is 49.12.

b Computed only for a 2x2 table

**Research Objective 1:** To examine the correlation between the gender of the household head and their engagement in labor sales.

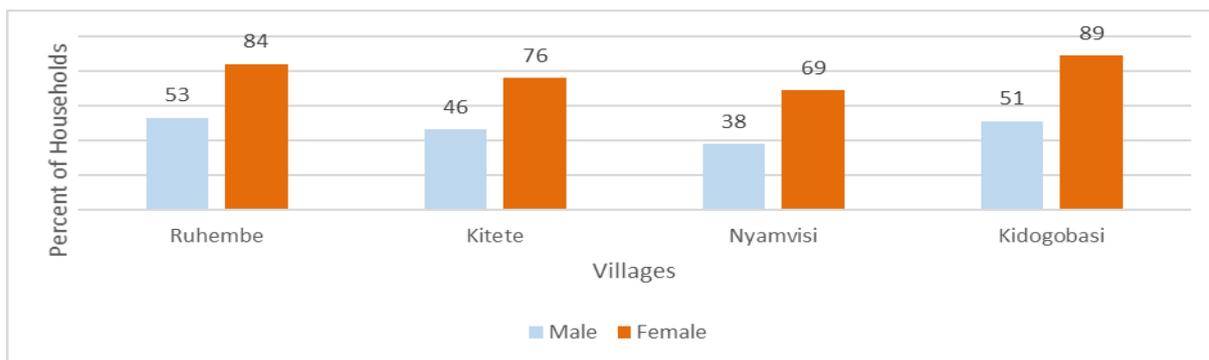
More than half of the households (56%) reported that they were selling labour power, highlighting its significance as a key livelihood strategy for these households. As seen in table 2, the extent of labour selling is different between female- and male-headed households.

Table 2 indicates that more than three-quarters (79.5%) of female-headed households were engaged in selling labour, while the figure is less than half (47%) for male-headed households. These findings suggest that labour selling is more prevalent among female-headed households than their male-headed counterparts. To assess the statistical significance of the association between the gender of the household head and the decision to sell labour, a

chi-square test was conducted, and the results are presented in Table 3.

It can be observed in Figure 1 that in all villages, more female-headed households are selling more labour than male-headed households. Selling labour ranges from 69% to 89% for female-headed households, compared to 38% to 53% for male-headed households. The gender gap in selling labour can be explained by the fact that female-headed households are headed by single mothers, who are the sole providers of family needs. Furthermore, the

gender gap may be explained by the lack of other productive resources that can give women the capability to participate in other lucrative livelihood options. In Nyamvisi village, only a small proportion of households are selling labour compared to other villages. This can be explained by the presence of other non-farming economic activities. The village is located along the main road to the headquarters of Kilombero District, endowed with shops and business activities that provide non-farming- wage employment.



**Figure 1: Labour selling between male and female-headed households across villages**



**Figure 2: Labour selling practices across gender in different activities**

Figure 2 indicates that a substantial majority of female-headed households (79.5%) are engaged in selling labour, whereas fewer than half of male-headed households partake in this activity. The data further underscores how gender roles significantly influence wage employment across various activities. Male-headed households are involved in all sugarcane production tasks, while women predominantly participate in weeding and planting activities. Notably, herbicide application, which involves carrying a large pump on one's back while spraying on farms, is a task often beyond the

physical capability of most women. Harvesting, which includes burning sugarcane fields to deter wild animals, as well as cutting and hauling the sugarcane to trucks, is exclusively undertaken by men. The proportion of households involved in selling labour for off-farm employment is relatively small for both genders, with a slightly higher percentage (28%) for male-headed households compared to female-headed households (12%). This suggests that either this activity is performed by family labour or most households lack the

employment qualities necessary for inclusion in these activities.

**Research Objective 2:** To determine whether there is an association between the gender of the household head and the hiring of labour.

Table 4 indicates that 57% of the total households confirmed that they were hiring labour, suggesting that it is an integral aspect of coordinating the various tasks associated with sugarcane cultivation.

The differences in labour hiring between female-and male-headed households as shown in table 4.

The table further reveals that just over one-third of female-headed households (39%) engaged in labour hiring, in contrast to the nearly two-thirds of male-headed households (64%). These results indicate a greater prevalence of labour hiring in male-headed households compared to their female-headed counterparts. To determine the robustness of the results, the chi-square test was conducted and the results are shown Table 5.

**Table 4. Gender of the household head and hiring of labour**

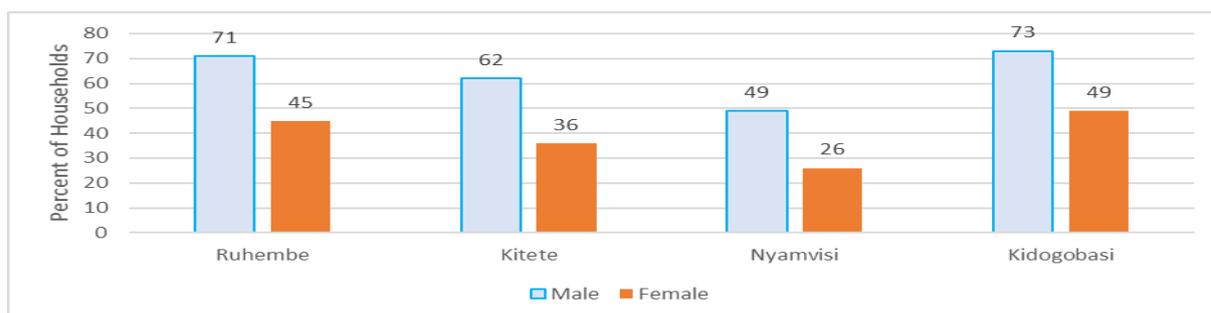
Gender of the household head		Hire Labour		
		No	Yes	Total
Female	Count	68	44	112
	% Within gender of the household head	61	39	100.0
Male	Count	103	184	287
	% Within gender of the household head	36.0	64.0	100.0
Total	Count	171	209	399.0
	% Within gender of the household head	43.0	57.0	100.0

**Table 5. The Chi-square test results**

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	20.274 <sup>a</sup>	1	.000
Continuity Correction <sup>b</sup>	19.273	1	.000
Likelihood Ratio	20.186	1	.000
Fisher's Exact Test			
Linear-by-Linear Association	20.224	1	.000
N of Valid Cases	399		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 48.00.

b. Computed only for a 2x2 table



**Figure 3: Labour hiring between male and female-headed households across villages**

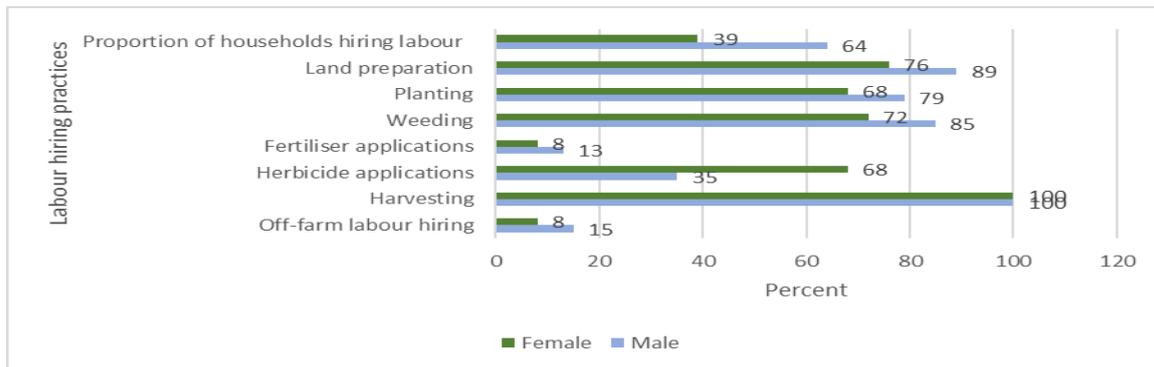
The value of the chi-square test statistic is 20.274 and the corresponding p-value is 0.000. Therefore, there is an association between gender of the household head and hiring of labor. More male-headed households were more likely to hire labor than female-headed households were. Further insights into the dynamics of labour hiring between

male and female-headed households within each village and across various employment activities are detailed in Figures 3 and 4.

Figure 3 reveals that across all villages, male-headed households consistently engaged in more labour hiring compared to their female-headed

counterparts. Notably, Nyamvisi village emerged as an outlier, demonstrating lower rates of labour hiring for both male- and female-headed households. This deviation can be attributed to the

place being situated between the sugar company's estates and mountains, resulting in limited arable land.



**Figure 4: Gender Hiring Practices across gender in different activities**

Figure 4 illustrates that, on average, male-headed households tended to hire more labour compared to their female-headed counterparts. The highest rate, at 64%, is observed among male-headed households, whereas for female-headed households, it stands at 39%. Additionally, the findings highlight that the proportion of households engaging in labour hiring is particularly high in harvesting, planting and weeding for both male- and female-headed households. The limited use of hired labour in fertiliser application for both male and female households suggests that this task is predominantly undertaken by family members. A significant distinction arises in herbicide application, where a higher proportion of female-headed households opt to hire labour. Conversely, the lower level of hired labour in herbicide application for male-headed households implies that men predominantly handle this task using self-labour. In contrast, both male- and female-headed households exhibited low levels of labour hiring in off-farm employment, with a maximum of about 15% for male-headed households and only 8% for female-headed households.

The study reveals gender disparity in labour selling and hiring practices within sugarcane agricultural activities. Labour selling is more prevalent among female-headed households than male-headed households, while male-headed households are more inclined to hire labour compared to their female-headed counterparts. Statistical test results yielded significance of the gender difference. The findings are closely related with previous studies in developing countries, such as Vicol (2015), Swinnen

and Vandeplass (2010) and Spielman and Zambrano (2016). The studies concluded that women constituted the labour force in agricultural activities, few of them engaging hired labourers.

### Conclusion and Recommendations

In conclusion, the study illuminates significant gender disparities in wage employment within sugarcane outgrower schemes. The prevalence of a considerable number of female-headed households engaging in labour selling underscores the imperative to comprehend the implications of this activity on their livelihoods, to ensure that women obtain meaningful benefits from their participation in the labour market. Conversely, the greater involvement of male-headed households in hiring labour highlights the pivotal role that men play in contract farming arrangements as owners of economic resources and employers. This underscores the necessity for gender-sensitive interventions in the agricultural sector.

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