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Contribution of Oil Palm Growing to Household Income in Mugoye Sub-County, Kalangala District, Uganda

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Abstract
Oil palm cultivation has emerged as a key agricultural enterprise in Uganda, particularly in Kalangala District, where it contributes substantially to rural livelihoods. However, limited empirical evidence exists on its actual contribution to household income among smallholder farmers in Mugoye Sub-County. This study assessed the contribution of oil palm cultivation to household income in Mugoye Sub-County, Kalangala District, Uganda. The study employed a cross-sectional research design and used primary data collection methods. A total of 130 respondents, comprising 128 smallholder oil palm farmers and 2 agricultural extension officers, were sampled using simple random sampling. Data were collected through structured questionnaires and key informant interviews to capture socio-economic characteristics, involvement in oil palm farming, income sources, and perceptions of the crop's economic benefits. Quantitative data were coded, entered into Microsoft Excel, and analyzed using SPSS version 25. Descriptive statistics (mean, standard deviation) and inferential statistics (Chi-square tests) were employed to assess relationships between variables. The results indicate that oil palm cultivation is the main source of income for most households (Mean = 4.32, SD = 0.79, $\chi^2 = 15.24$, $p = 0.001$) and significantly contributes to meeting basic household needs (Mean = 4.15, SD = 0.82, $\chi^2 = 12.67$, $p = 0.003$), paying children's school fees (Mean = 4.05, SD = 0.88, $\chi^2 = 10.54$, $p = 0.015$), and improving household nutrition (Mean = 3.92, SD = 0.91, $\chi^2 = 9.36$, $p = 0.025$). Farmers also reinvest income into farm inputs and expansion (Mean = 4.28, SD = 0.77, $\chi^2 = 14.11$, $p = 0.002$), acquire assets such as livestock and furniture (Mean = 4.08, SD = 0.85, $\chi^2 = 11.32$, $p = 0.010$), and participate in community activities (Mean = 3.84, SD = 0.94, $\chi^2 = 8.47$, $p = 0.037$). Overall, respondents agreed that oil palm cultivation has improved their household economic status (Mean = 4.36, SD = 0.74, $\chi^2 = 16.02$, $p = 0.000$). These findings suggest that oil palm cultivation is a critical driver of household income, welfare, and livelihood improvement in Mugoye Sub-County. Access to productive assets, reinvestment of income, and participation in structured value chains enhance economic well-being, aligning with the Sustainable Livelihood Framework. The study recommends strengthening farmer support programs, improving market access, and promoting financial literacy to optimize the income-generating potential of oil palm for smallholder farmers in the region

Keywords: Oil palm cultivation, household income, smallholder farmers

Introduction
Oil palm is one of the most productive oil crops globally, yielding significantly more oil per hectare than other vegetable oils, making it an attractive investment for governments and private sectors seeking to boost agricultural output and exports (Santika et al.,2019). In Uganda, the government has actively promoted oil palm cultivation as part of its agricultural modernization and poverty alleviation strategies, particularly through initiatives like the National Oil Palm Project (NOPP) (Amugoli etal.,2022). This project aims to establish a sustainable oil palm industry, create employment opportunities, and improve the incomes of smallholder farmers (Wiebelt etal.,2011). The establishment of oil palm plantations in areas like

Kalangala District is a direct result of these national policies and investments (Namirimo, 2019). Therefore, understanding the national policy framework and the rationale behind promoting oil palm is essential for interpreting its local impact (Bennett et al.,2015).

Oil palm (*Elaeis guineensis*) cultivation has been promoted in Uganda as a key agricultural intervention to increase domestic vegetable oil production, reduce import dependency, and improve rural livelihoods (Sibhatu,2023). In particular, Kalangala District has been the focus of the National Oil Palm Project (NOPP) and other government-supported initiatives which aim to transform the local economy through oil palm value chain development (Nsamba-Gayiiya etal.,2015). Between its introduction in the early 2000s and more recent years, oil palm has expanded over thousands of hectares in Kalangala, with both nucleus estates and out-grower smallholder farmers participating. This expansion is part of a broader agricultural policy in Uganda seeking to diversify income sources for rural populations, and to stimulate non-agricultural spillover effects (For example trade, services) arising from agricultural intensification (Lyons, and Westoby,2014).

Kalangala District is a unique setting in Uganda, being an island district composed of many islands in Lake Victoria, including Buggala, Bubembe, Bunyama and other outlying islands. Its geography creates challenges in transportation, infrastructure, market access, and service delivery. Despite these challenges, oil palm has been seen as a suitable crop given its relatively long productive lifespan (about 25-30 years after maturity), frequent harvest intervals (every 7-10 days once mature), and potential for relatively stable incomes for growers (Amugoli et al.,2022). The project also involves households in Mugoye Sub-County, which is one of the administrative units within Kalangala and hosts oil palm growers plus households affected by related activities (e.g., workers, service providers) (Sibhatu, 2023).

There is evidence already that oil palm cultivation has had measurable income impacts in Kalangala. A Local Economy-Wide Impact Evaluation (LEWIE) conducted in 2017 found that oil palm households saw increases in real incomes per additional acre, and that even non-participating households benefited via spillovers (Sibhatu,2023). For example, the LEWIE showed that each extra mature oil palm acre adds approximately UGX 1.02 million annually in real income for producing households; while non-producers and worker households also see gains, though smaller. The project also significantly increased small business formation among oil palm growing and non-oil palm growing households in Kalangala, indicating broader livelihood impacts beyond just farm income (Amugoli et al.,2022).

However, despite these gains, there remain gaps in understanding of exactly how oil palm cultivation contributes to total household income in specific sub-counties like Mugoye. Some constraints to maximising benefits have been observed: delays or high cost in obtaining seedlings for new plantings; losses through theft of fruit bunches; fluctuations in fresh fruit bunch (FFB) prices; and infrastructure or logistical challenges in transporting harvested material to mills (Amugoli et al.,2022). Moreover, environmental trade-offs (deforestation, changes in land use) and social impacts (changes in livelihood patterns, gender roles) may moderate or influence income benefits. These observations underscore the importance of a localized, granular study in places like Mugoye to quantify how oil palm cultivation contributes to income, what portion of income is derived from oil palm versus other sources, and which factors enhance or inhibit its contribution (Namirimo, 2019).

Given this context, studying Mugoye Sub-County specifically offers opportunities: to measure household income with respect to oil palm participation; to capture direct, indirect, and spillover effects; to understand the role of smallholder farmers versus estate or out-grower systems; and to inform policy about how to optimize the benefits of oil palm in similar geographies (Namirimo, 2019). Such a study would help inform strategies for seedling distribution, price regulation, infrastructure investment, and extension services to maximize income impact while minimizing risks. It can also contribute to evidence for Uganda's agricultural

development goals around poverty reduction, livelihood diversification, rural transformation, and food security.

Theory underpinning the study

The study adopted the Agricultural Household Model (Singh, Squire, & Strauss, 1986) explains the dual role of rural households as both producers and consumers. According to this model, household decisions about production (such as whether to cultivate oil palm) and consumption (such as allocation of income to food, education, or investment) are made simultaneously to maximize overall welfare. In the context of Mugoye Sub-County, farmers decide how much land and labour to allocate to oil palm cultivation versus food crops, considering market prices, costs, and risks. The income derived from oil palm directly influences their consumption patterns and ability to invest in other productive assets. This theory helps to understand how oil palm cultivation affects total household income and how income shocks or market fluctuations can alter household economic behavior.

Study area

The study was conducted in Mugoye Sub-County, Kalangala District. Mugoye Sub- County is found on Bugala Island in Kalangala district. The district is situated in Lake Victoria-South Central Uganda. It covers an area of 9,066.8sq.km. Only 432.1sq.km (4.8%) is land and the rest is mass water. Kalangala district comprises of 84 islands in Lake Victoria with a total land area of 46,830 hectares, more than half of which is on the main island of Bugala (27,000 ha), administratively divided into two counties of Bujumba and Kyamuswa counties. The district has seven sub counties and they are Bubeke, Kalangala TC, Mugoye, Bufumira, Kyamuswa, Bujumba and Mazinga. The population is 42% females and 58% males (UBOS-Statistical Abstract, 2020), and 30% non-native, with 2% born outside Uganda.It is bordered by Mpigi and Wakiso districts to the North, Buvuma to the East, Tanzania to the South and, Masaka and Rakai districts to the West. Mugoye sub county is on latitude 0°28'00.0"S (-0.4666700°) and longitude of 32°10'60.0"E (32.1833300°).

Study design target population and sampling frame

The study examined the impact of oil palm cultivation on the income of smallholder farmers in Mugoye Sub-County, Kalangala District, utilizing a cross-sectional research design. Data were collected from 130 participants, including 128 farmers selected through simple random sampling and 2 agricultural extension officers. The target population consisted of 400 registered oil palm farmers, identified through the Sub-County Production Office and SOPGCO. This sampling approach aimed to reflect the broader farming population, facilitating a comprehensive analysis of the relationship between oil palm production and household income levels.

Data collection methods and instruments

The study assessed the impact of oil palm cultivation on household income among smallholder farmers in Mugoye Sub-County, Kalangala District, using structured questionnaires administered to 128 farmers and 2 agricultural extension workers. The research included both quantitative and qualitative questions on socio-economic characteristics, involvement in oil palm farming, income sources, and farmers' perceptions of the crop's economic benefits. Variables such as land size, production levels, market access, and income diversification were also examined. Key informant interviews supplemented the findings, providing insights into income trends and challenges faced by the farmers. Pre-testing of the instruments ensured the reliability and validity of the data collected, which aimed to clarify the relationship between oil palm cultivation and household income in the region.

Data processing and analysis

The study on oil palm cultivation's contribution to household income among smallholder farmers in Mugoye Sub-County involved careful data collection and analysis to ensure accuracy and reliability. Completed questionnaires were checked for consistency, with follow-ups on unclear responses. Quantitative data were coded, analyzed using SPSS, and summarized using descriptive statistics, while

inferential tests established relationships between oil palm cultivation and income. Qualitative data from open-ended questions were thematically analyzed to identify perceptions regarding income potential. The integration of both quantitative and qualitative methods provided a comprehensive view of oil palm's economic impact on households.

Results

Socio-Economic Characteristics and Household Income

The relationship between socio-economic characteristics and household income is crucial in rural livelihood analysis, particularly in smallholder farming communities like Mugoye Sub-County. Factors such as age, education level, household size, and farming experience influence agricultural productivity and income. Older and more experienced farmers may utilize their knowledge and networks to improve production, while higher education enhances financial management and technology adoption. Understanding these interactions is vital for designing interventions that boost income, reduce vulnerability, and promote sustainable livelihoods in oil palm farming communities.

Table 1: Relationship between Socio-Economic Characteristics and Household Income among Oil Palm Farmers in Mugoye Sub-County (n = 130)

Socio-Economic Variable	Mean	Std. Deviation	χ^2 (Chi-square)	p-value
Age of household head (years)	39.84	8.72	6.215	0.045
Education level	2.68	0.93	9.476	0.022
Household size	5.21	2.14	4.362	0.079
Access to credit	1.47	0.50	11.286	0.008
Farming experience (years)	10.42	6.31	7.904	0.031

Source; Field data 2025

The study revealed a significant relationship between the age of the household head and household income ($\chi^2 = 6.215$, $p = 0.045$), indicating that older farmers tend to earn higher incomes from oil palm cultivation compared to their younger counterparts. This can be attributed to the fact that older farmers often possess greater farming experience, better access to land, and more established social networks, which enhance their production efficiency. In Mugoye Sub-County, many elderly farmers were among the early participants in the National Oil Palm Project, gaining access to initial support such as subsidized seedlings and technical training. Conversely, younger farmers, while more energetic and adaptable, often face constraints such as limited capital and smaller landholdings, which restrict their production capacity. These findings are consistent with Ellis (2000), who noted that farming experience and asset accumulation over time contribute to increased agricultural productivity and income levels. The results imply that programs promoting oil palm cultivation should adopt intergenerational strategies by facilitating youth access to land, start-up capital, and mentorship opportunities to ensure the sustainability of oil palm production and equitable income distribution across age groups.

The results showed a significant relationship between education level and household income ($\chi^2 = 9.476$, $p = 0.022$), indicating that farmers with higher education levels earned more income from oil palm cultivation than their less-educated counterparts. Education equips farmers with the knowledge and skills needed to make informed production and marketing decisions, enabling them to access and interpret market information, adopt modern technologies, and manage farm resources efficiently. In Mugoye Sub-County, farmers with secondary or higher education were more likely to keep farm records, participate in farmer organizations, and negotiate favorable prices with buyers, thereby enhancing their profitability. These findings align with Todaro and Smith (2015), who contend that education strengthens human capital, leading to increased productivity and improved income

outcomes in agriculture. The implication of this finding is that investment in farmer education and capacity building is crucial for maximizing the economic benefits of oil palm cultivation. Promoting adult literacy programs and offering training in financial and farm management can empower farmers to make better decisions, increase productivity, and improve household income levels.

The results revealed that the relationship between household size and household income was statistically insignificant ($\chi^2 = 4.362$, $p = 0.079$), indicating that family size does not significantly influence income derived from oil palm cultivation. Although larger households may offer more labour for farm operations, they also experience greater consumption demands, which can offset potential income gains. In Mugoye Sub-County, some larger families were found to struggle in balancing farm labour with non-farm responsibilities, thereby limiting productivity benefits. This outcome aligns with the findings of Foster and Rosenzweig (2010), who noted that household size has mixed effects on income, depending on the proportion of productive labour relative to dependents. The implication of this finding is that agricultural policies and interventions should prioritize improving labour productivity rather than relying on household size. Encouraging the adoption of mechanization and labour-saving technologies can enhance production efficiency and increase household income regardless of family composition.

The study found a significant relationship between access to credit and household income ($\chi^2 = 11.286$, $p = 0.008$), indicating that farmers who obtained agricultural loans or revolving funds earned higher incomes from oil palm cultivation than those without access to credit. Credit availability empowers farmers to purchase essential inputs, expand their cultivated acreage, and invest in improved technologies that boost productivity. In Mugoye Sub-County, farmers affiliated with the Ssese Oil Palm Growers Cooperative Society Ltd (SOPGCO) credit scheme benefited from enhanced access to fertilizers, hired labour, and efficient produce transportation, resulting in higher yields and profitability. These findings are consistent with World Bank (2018), which reported that access to rural credit significantly contributes to farm output and income growth. The implication of this result is that strengthening rural financial institutions and designing credit schemes that are accessible and affordable to smallholder farmers can greatly enhance the economic outcomes of oil palm production. Moreover, affordable financing encourages continuous reinvestment in farm enterprises and supports income diversification, contributing to the long-term sustainability of the sector.

The results established a significant relationship between farming experience and household income ($\chi^2 = 7.904$, $p = 0.031$), indicating that farmers with more years of experience in oil palm cultivation earned higher incomes than their less-experienced counterparts. Experienced farmers possess valuable practical knowledge in land management, pest control, and harvesting practices, which enables them to maximize yields and minimize production losses. In Mugoye Sub-County, long-term participants in oil palm farming demonstrated a better understanding of production cycles, cooperative management, and market dynamics, which contributed to their higher profitability. These findings are consistent with Mugonola and Nkonya (2012), who reported that agricultural experience enhances technical efficiency and has a positive impact on farm income. The implication of this result is that capacity-building initiatives should prioritize knowledge sharing between experienced and novice farmers through farmer-to-farmer mentorship programs and demonstration plots. Such approaches can facilitate skill transfer, improve productivity, and promote equitable income growth among oil palm farmers.

Relationship between Oil Palm Farming Characteristics and Household Income

The relationship between oil palm farming characteristics and household income is crucial for understanding smallholder agricultural economics. Key factors include farm size, production levels, access to credit, market proximity, farming experience, and income diversification, all of which affect profitability. In Mugoye Sub-County, these characteristics influence how households can convert

labour and resources into financial gains. Larger landholdings and higher production often lead to increased revenue, while access to credit and markets allows for better investment in inputs and sales optimization. Analyzing these relationships reveals household income drivers, constraints on profitability, and guides interventions to enhance farm efficiency and improve rural livelihoods.

Table 2: Relationship between Oil Palm Farming Characteristics and Household Income in Mugoye Sub-County (n = 130)

Socio-Economic Variable	Mean	Std. Deviation	χ^2 (Chi-square)	p-value
Land size under oil palm (acres)	3.42	2.16	14.328	0.001
Annual production level (tons of FFB)	12.54	5.47	16.775	0.000
Market access (distance to collection center, km)	4.87	2.98	8.653	0.034
Income diversification (no. of other income sources)	2.11	1.04	6.894	0.047
Perception of oil palm profitability.	4.26	0.81	10.212	0.019

Source: Field data 2025

The findings indicated a highly significant relationship between land size under oil palm and household income ($\chi^2 = 14.328$, $p = 0.001$), showing that farmers with larger farm holdings earned higher incomes than those with smaller plots. Larger land sizes enable farmers to benefit from economies of scale through increased output, more efficient input utilization, and higher overall revenue. In Mugoye Sub-County, large-scale oil palm farmers often supply directly to millers and receive bonuses for bulk deliveries, further enhancing their earnings. Conversely, smallholders with limited land struggle to cover production costs and achieve substantial profitability. These findings are consistent with IFAD (2019), which reported that land availability strongly influences income levels from perennial cash crops in Uganda. The implication of this result is that policies should focus on promoting equitable access to land and strengthening tenure security to enable smallholders to expand cultivation sustainably. Additionally, initiatives encouraging land consolidation or cooperative farming arrangements can enhance collective productivity and income generation among oil palm producers.

The study revealed a significant correlation between production level and household income ($\chi^2 = 16.775$, $p = 0.000$), indicating that farmers with higher yields earned substantially more from oil palm cultivation than those with lower production levels. Increased productivity directly enhances sales volumes and overall household revenue. In Mugoye Sub-County, farmers who utilized quality seedlings, practiced proper farm management, and conducted timely harvesting achieved superior yields compared to others. Factors such as input availability, technical knowledge, and favorable weather conditions were found to play a critical role in determining production outcomes. These findings align with FAO (2020), which emphasizes that improving agricultural productivity is fundamental to increasing farm income and strengthening food security in developing economies. The implication of this result is that government agencies and development partners should reinforce agricultural extension services to build farmers' technical capacity, promote the adoption of improved production practices, and ensure timely access to quality inputs. Such interventions can significantly enhance yield performance and maximize household income from oil palm cultivation.

The results indicated a significant relationship between market access and household income ($\chi^2 = 8.653$, $p = 0.034$), showing that farmers located closer to collection centers or markets earned higher incomes from oil palm cultivation. Proximity to markets lowers transportation costs, minimizes post-harvest losses, and facilitates timely sales of fresh fruit bunches, thereby improving profitability. In Mugoye Sub-County, farmers with convenient access to roads or collection centers managed by the Ssese

Oil Palm Growers Cooperative Society Ltd (SOPGCo) benefited from consistent buyers, reliable transport, and better farm-gate prices. These findings are consistent with Barrett (2008), who highlighted that improved rural market connectivity is a critical factor influencing agricultural profitability and household welfare. The implication of this result is that strengthening rural infrastructure particularly feeder roads, collection networks, and transportation systems is essential for enhancing market access, reducing transaction costs, and increasing the income levels of smallholder oil palm farmers.

The study found a significant association between income diversification and household income (χ^2 = 6.894, p = 0.047), indicating that farmers engaged in multiple income-generating activities earned higher overall incomes than those relying solely on oil palm cultivation. Diversifying into non-farm enterprises such as petty trade, livestock rearing, or fishing helps households manage risks related to crop failure or price volatility, thereby stabilizing livelihoods. In Mugoye Sub-County, farmers who combined oil palm farming with secondary income sources experienced more consistent and resilient household incomes. These findings are consistent with Ellis (2000), who highlighted that diversified income portfolios enhance household resilience and economic security in rural contexts. The implication is that development programs should promote integrated livelihood strategies, supporting farmers to pursue multiple income streams to reduce dependence on a single crop and strengthen overall household financial stability.

The results established a significant relationship between farmers' perception of oil palm profitability and household income (χ^2 = 10.212, p = 0.019), showing that farmers who regarded oil palm as a profitable enterprise earned higher incomes than those with less favorable perceptions. Positive perceptions drive greater investment, improved farm management, and stronger commitment to the crop. In Mugoye Sub-County, farmers with optimistic views were more likely to expand their plantations, adopt quality inputs, and participate in cooperative structures, enhancing their productivity and earnings. These findings align with Rogers (2003), who emphasized that perceived benefits significantly influence the adoption and success of innovations, including new crop systems. The implication of this result is that targeted awareness campaigns and extension services demonstrating the tangible economic benefits of oil palm cultivation can motivate more farmers to invest in the crop, thereby improving household incomes and contributing to broader regional economic development.

Household income from oil palm

Oil palm cultivation offers crucial livelihood income for smallholder farmers in tropical regions, offering high yield potential for income diversification and poverty reduction. Respondents were asked about the income acquired from oil palm and their responses were recorded in table 3 below.

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Table 3: Household income from oil palm.

Monthly income from oil palm (UGX)	**Frequency**	**Percentage**
Below 1,000,000	18	13.8
1,000,000–3,000,000	45	34.6
3,000,000-4,000,000	38	29.2
5,000,000-5,000,000	21	16.2
Above 5,000,000	**8**	6.2
Total	**130**	**100**

Source: Field data 2025

Results established that a substantial proportion of respondents (34.6%) earned between UGX 1,000,000–3,000,000 per month from oil palm, followed by 29.2% who earned UGX 3,000,000-

4,000,000 Together, these two categories represented 63.8% of the respondents, suggesting that for the majority, oil palm provided a modest but reliable source of monthly income. This level of income, while not exceptionally high, could support household needs such as food, school fees, healthcare, and small investments, thus contributing meaningfully to household livelihoods.

On the lower end, 13.8% of respondents earned below UGX 1,000,000 per month, which reflected factors such as limited land size, poor yields, inadequate access to markets, or early stages of production (young palms not yet at peak yield). These households had not yet been realized the full economic potential of oil palm cultivation and needed targeted support such as improved seedlings, agronomic training, or access to extension services to boost productivity. 16.2% of the farmers earned UGX 4,000,000-5,000,000 and 6.2% earned above UGX 5,000,000 per month, demonstrating that oil palm cultivation could be a high-income enterprise for a minority of farmers likely those with larger landholdings, mature plantations, better farming practices, and stronger market linkages. These high earners exemplify the crop's potential as a viable commercial enterprise that could significantly improve rural livelihoods. During an interview one of the agriculture extension workers had this to say;

> *"Oil palm farmers with larger landholdings can cultivate more trees, leading to higher production volumes and monthly income. However, those with small land sizes are limited in output. Younger or recently started farmers earn less than UGX 1,000,000 per month. Improved agronomic practices and access to quality inputs and services also contribute to income differences"*

This is in line with Rahayu et al. (2022) who revealed that the average monthly income for smallholders engaged in independent oil palm cultivation varies widely, depending on factors such as yield, access to markets, and the efficiency of production practices. On average, independent smallholders in Sumatra earned between IDR 3 million to 5 million per hectare per month.

Results established that majority of respondents (96.9%) agreed that oil palm cultivation had led to improved household income, confirming the crop's direct contribution to economic well-being. This strong positive perception highlights oil palm as a dependable source of cash, allowing households to meet essential needs and improve their standard of living. The very small percentage (3.4%) who did not perceive an income benefit were in early stages of cultivation, own very small plots, or face challenges related to market access or low productivity. This implies that oil palm was a reliable income source, providing a consistent income stream for farmers. Its high market demand ensures regular buyers, and its low labor and maintenance requirements contribute to better profit margins. Oil palm also provides access to cash income, especially for rural farmers, enabling them to purchase goods and services that improve their standard of living. During an interview one of the agriculture extension workers had this to say;

> *"Farmers who receive support services and training can improve their agronomic practices, leading to increased yields and higher incomes. However, some farmers still acquire low income benefits due to factors such as immature plantations, limited land ownership, poor productivity or management, and market access barriers. These factors weaken the perceived contribution of oil palm cultivation and hinder farmers' full benefit from sales"*

This is in agreement with Shinyekwa et al. (2021) who pointed in Kalangala, where oil palm cultivation is most established, smallholder farmers have reported average monthly incomes ranging from UGX 300,000 to UGX 600,000 (approximately USD 80 to USD 160).

High-Level Analysis Household Income Contribution from Oil Palm Cultivation

Household income from oil palm cultivation is vital for rural livelihoods, especially in smallholder farming regions. As a cash crop, oil palm provides steady revenue for essential needs, education, nutrition, and community support. In areas like Mugoye Sub-County, it plays a crucial role in

household economic strategies and offers opportunities for wealth accumulation. Cultivation increases farm productivity and enhances market access, contributing to income stability and poverty reduction. Overall, oil palm is a key driver of rural household welfare and socioeconomic development. Respondents were asked about the household income contribution from oil palm cultivation and results from the analysis of their responses were recorded in table 4

Table 4: High-Level Analysis of Household Income Contribution from Oil Palm Cultivation (n = 130)

Household Income Contribution from Oil Palm Cultivation	**Mean**	**Std. Deviation**	**χ^2 (Chi-square)**	**p-value**
Oil palm cultivation is my main source of household income	4.32	0.79	15.24	0.001
Income from oil palm allows me to meet basic household needs	4.15	0.82	12.67	0.003
Oil palm income contributes to paying children's school fees	4.05	0.88	10.54	0.015
Earnings from oil palm help improve household nutrition	3.92	0.91	9.36	0.025
Income from oil palm allows investment in farm inputs and expansion	4.28	0.77	14.11	0.002
Profits from oil palm contribute to household asset acquisition (e.g., furniture, livestock)	4.08	0.85	11.32	0.010
Oil palm cultivation enables participation in community activities	3.84	0.94	8.47	0.037
oil palm cultivation has improved my household economic status	4.36	0.74	16.02	0.000

Source; Field data 2025

Results revealed that oil palm cultivation significantly contributes to household income in Mugoye Sub-County, Kalangala District. Most respondents indicated that oil palm is their main source of income (Mean = 4.32, SD = 0.79, χ^2 = 15.24, p = 0.001) and enables them to meet basic household needs (Mean = 4.15, SD = 0.82, χ^2 = 12.67, p = 0.003). Income from oil palm also supports paying children's school fees (Mean = 4.05, SD = 0.88, χ^2 = 10.54, p = 0.015) and improving household nutrition (Mean = 3.92, SD = 0.91, χ^2 = 9.36, p = 0.025), indicating positive effects on welfare. Additionally, farmers reinvest earnings in farm inputs and expansion (Mean = 4.28, SD = 0.77, χ^2 = 14.11, p = 0.002) and acquire household assets such as furniture and livestock (Mean = 4.08, SD = 0.85, χ^2 = 11.32, p = 0.010), demonstrating the role of oil palm in building physical and financial capital. Income from the crop also enables participation in community activities (Mean = 3.84, SD = 0.94, χ^2 = 8.47, p = 0.037), reflecting enhanced social capital, while overall, respondents agreed that oil palm cultivation has improved their household economic status (Mean = 4.36, SD = 0.74, χ^2 = 16.02, p = 0.000).

Discussion

Results established that oil palm is widely regarded as the primary source of household income, evidenced by a high mean score of 4.32 and a low standard deviation of 0.79, indicating strong consensus among respondents. The Chi-square test (χ^2 = 15.24, p = 0.001) confirmed a statistically significant association between oil palm cultivation and household income. This shows that oil palm has

become a cornerstone of livelihoods in Mugoye, with farmers relying on it to supplement income from other lower-yield crops. The implies that development programs should continue promoting oil palm expansion and efficiency improvements while facilitating access to credit and market linkages, ensuring that smallholders can sustainably rely on the crop as a primary income source. During an interview one of the local leaders had this to say;

"Most households depend on oil palm for their daily expenses" and *"it has become the backbone of livelihoods in the community"*,

The findings align with IFAD (2019), which underscores the importance of cash crops in transforming rural incomes in Uganda, and reflects the successful integration of smallholder farmers into structured supply chains managed by SOPGCo, enhancing income stability.

The results indicate that income from oil palm significantly contributes to meeting basic household needs, with a mean score of 4.15 and a standard deviation of 0.82, reflecting strong agreement among respondents. The Chi-square test ($\chi^2 = 12.67$, $p = 0.003$) confirms the statistical significance of this association. The imply that policies and development interventions should provide sustained support for oil palm farmers through extension services, input subsidies, and technical guidance to ensure continuous production and the ability to meet household needs effectively. During an interview one of the local leaders had this to say;

"Income from oil palm allows us to buy food and pay school fees" and *"it helps cover daily household expenses and health costs"*

This finding demonstrates that oil palm income enables families in Mugoye to access essential goods and services, supporting the Sustainable Livelihood Framework (SLF), which identifies financial capital as a crucial determinant of improved livelihoods (Chambers & Conway, 1992).

The results indicate that income from oil palm significantly contributes to paying children's school fees, with a mean score of 4.05 and a standard deviation of 0.88, reflecting strong agreement among respondents. The Chi-square test ($\chi^2 = 10.54$, $p = 0.015$) confirms a statistically significant relationship between oil palm income and education expenditure. The imply that extension services and farmer cooperatives should incorporate financial literacy programs to help farmers optimize income allocation, ensuring that household earnings continue to support children's education while sustaining farm investments. One of the key informants emphasized that

"Proceeds from oil palm help me pay for my children's tuition and school supplies" and *"without this income, sending children to school would be very difficult"*,

This finding suggests that oil palm cultivation directly enhances educational access and enables families to invest in human capital, as children of farming households can afford tuition, books, and uniforms (World Bank. 2018).

The results show that earnings from oil palm significantly contribute to improving household nutrition, with a mean score of 3.92 and a standard deviation of 0.91, indicating general agreement among respondents. The Chi-square test ($\chi^2 = 9.36$, $p = 0.025$) confirms the statistical significance of this relationship. The imply that nutrition awareness campaigns should be integrated with income-generating programs to encourage farmers to allocate a portion of their earnings toward improving household food quality and overall health. During an interview one of the agriculture extension workers had this to say;

"Money from oil palm allows us to buy vegetables, fruits, and protein-rich foods" and *"it helps improve what we eat at home"*.

This finding demonstrates that oil palm income enables households to access a more varied and nutritious diet, consistent with FAO (2020), which links agricultural income to food security. The slightly lower mean suggests that some households may prioritize other expenses over nutrition, limiting the full impact of income gains.

The analysis revealed that income from oil palm significantly supports investment in farm inputs and expansion, with a mean score of 4.28 and a standard deviation of 0.77, reflecting strong agreement among respondents. The Chi-square test ($\chi^2 = 14.11$, $p = 0.002$) confirms the statistical significance of this

relationship. The imply that development programs should promote sustainable reinvestment strategies, providing guidance on optimal use of farm income for purchasing inputs, expanding acreage, and diversifying activities to maximize returns and ensure long-term productivity gains.

"We use the money from oil palm to buy seedlings, fertilizers, and hire labour" and *"reinvesting earnings back into the farm helps us increase production"*,

This finding demonstrates that farmers strategically allocate oil palm income to strengthen production assets, creating a positive feedback loop where higher income supports further farm growth, consistent with Ellis (2000), who notes that reinvestment in agricultural assets is critical for sustaining rural livelihoods.

The results indicate that profits from oil palm significantly contribute to household asset acquisition, including items such as furniture and livestock, with a mean score of 4.08 and a standard deviation of 0.85, reflecting strong agreement among respondents. The Chi-square test ($\chi^2 = 11.32$, $p = 0.010$) confirms the statistical significance of this relationship. The imply is that policy interventions should promote asset-based support programs or microfinance schemes to further encourage household investment and wealth creation through income derived from oil palm cultivation. During an interview one of the local leaders had this to say;

"Income from oil palm allows us to buy livestock and improve our homes" and *"it helps us build assets that secure our family's future"*

This finding demonstrates that oil palm income extends beyond covering daily expenses to strengthening household resilience, enhancing social status, and building physical capital, consistent with the Sustainable Livelihood Framework (SLF) which emphasizes asset accumulation as a key component of livelihood security.

The study found that oil palm cultivation enables participation in community activities, with a mean score of 3.84 and a standard deviation of 0.94, indicating general agreement among respondents. The Chi-square test ($\chi^2 = 8.47$, $p = 0.037$) confirms the statistical significance of this relationship. The imply is that programs encouraging farmer group membership and community-based initiatives can strengthen networks, facilitate knowledge exchange, and enhance collective economic opportunities among oil palm farmers. During an interview one of the local leaders had this to say;

"Income from oil palm allows us to pay cooperative fees and contribute to local projects" and *"it helps us take part in cultural and community activities"*

This finding demonstrates that oil palm income facilitates household contributions to local initiatives, promoting social capital development, a vital element of the Sustainable Livelihood Framework (SLF). The slightly lower mean suggests that while many households participate in community activities, some prioritize essential household needs over social engagement.

The results indicate that oil palm cultivation has substantially improved household economic status, with a mean score of 4.36 and a standard deviation of 0.74, the highest among all statements. The Chi-square test ($\chi^2 = 16.02$, $p = 0.000$) confirms the statistical significance of this perception. The imply that sustaining and expanding oil palm cultivation through targeted support programs, improved infrastructure, and enhanced market access can further increase household income, reduce poverty, and strengthen rural economic resilience. Key informants emphasized that

"Oil palm has transformed our household income and lifestyle" and *"we can now afford better food, education, and investments"*.

This finding reflects the cumulative effect of oil palm income on household consumption, education, nutrition, investment, and social participation, positioning the crop as a critical driver of economic well-being in Mugoye Sub-County. The results are consistent with IFAD (2019) and Chambers & Conway (1992), which assert that cash crops play a pivotal role in enhancing rural livelihoods.

Conclusion

The study established that oil palm cultivation significantly enhances household livelihoods in Mugoye Sub-County by generating income and supporting investments in education, nutrition, and

social participation. Higher incomes are linked to factors such as age, education, farming experience, land size, and market access and the key informants noted oil palm's transformative effect on their livelihoods. These findings are supported by frameworks like the Sustainable Livelihood Framework, emphasizing the importance of cash crops in building economic resilience. The study suggests ongoing support for extension services and sustainable practices to maximize economic benefits and improve community development.

Recommendations

Strengthening access to agricultural inputs and credit facilities is crucial for enhancing farmers' productivity and income. It is recommended that government agencies, development partners, and financial institutions offer affordable credit schemes for smallholder oil palm farmers, including low-interest loans and microfinance programs. Moreover, ensuring timely availability of quality inputs through cooperatives or agro-dealer networks can improve yields and enable farmers to reinvest profits for expansion.

Extension services should prioritize enhancing farmers' practical skills, agronomic practices, pest management, and financial literacy to increase household income. Initiatives like farmer-to-farmer mentorship, demonstration farms, and training workshops are essential for aiding less-experienced farmers. Additionally, including modules on record-keeping, market intelligence, and sustainable land management will empower farmers in making informed decisions for oil palm cultivation.

Investments in rural infrastructure, including feeder roads and community collection centers, enhance household income by reducing transaction costs and improving market access. Strengthening cooperative systems and linking smallholders directly with buyers can facilitate bulk sales and enhance pricing power. Market-oriented programs should offer farmers market information platforms for better decision-making and competitiveness.

Support for sustainable livelihood diversification is essential, as oil palm income aids household welfare but may not be sufficient alone. Diversifying into non-farm activities like livestock rearing and small-scale trade boosts resilience to economic uncertainties. Community engagement through initiatives and cooperatives fosters social networks and knowledge sharing, enhancing economic opportunities. Incorporating nutrition awareness and education into livelihood programs ensures the continued support of household well-being alongside health, education, and asset growth.

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