



ASSESSMENT OF YOUTHS' PARTICIPATION IN OIL PALM VALUE CHAIN ACTIVITIES IN AKAMKPA LOCAL GOVERNMENT AREA, CROSS RIVER STATE, NIGERIA.

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Abstract

This study examined the participation of youths in the oil palm value chain in Cross River State, Nigeria, with emphasis on their socio-economic characteristics, extent of involvement, perceptions, and major constraints. Data were collected from respondents and analyzed using descriptive statistics such as mean, frequency, percentage, and ranking. The results revealed that the majority of the respondents (80%) were within the productive age range of 26–35 years, predominantly male (75%), married (66%), and literate, with 93% having attained some level of formal education. A significant proportion (79%) belonged to cooperative societies, which enhanced their participation in value chain activities. Findings further indicated that youths were actively engaged in processing and marketing segments, with retailing of palm oil products, storage, and threshing ranking highest in participation. Respondents also perceived the oil palm value chain as a viable avenue for poverty reduction, employment generation, and increased productivity. However, high labour costs, land tenure constraints, poor road networks, inadequate storage facilities, insufficient capital, and ageing plantations were identified as key barriers to participation. The study recommends improved access to credit and land, strengthening of cooperative societies, investment in infrastructure and labour-saving technologies, and targeted capacity building to enhance youth participation and unlock the full potential of the oil palm value chain.

Key words: *Youths participation, oil palm value chain,*

Introduction

Youth constitute a vital asset to every nation, possessing significant potential to drive agricultural development through their energy, creativity, and willingness to adopt modern technologies (Kimaro *et al.*, 2015). In Nigeria, the involvement of youths in the oil palm value chain has received growing attention, particularly as agriculture is being repositioned to address pressing challenges such as unemployment, poverty reduction, and rural development. Conceptually, youths are individuals in a transitional stage between childhood and adulthood, characterized by rapid physical growth, intellectual development, and gradual social integration into adult roles, Federal Republic of Nigeria (2019). However, the specific age range that defines youth varies across institutions, cultures, and policy contexts. The African Youth Charter defines youth as individuals aged 15 to 35 years (African Union, 2006), while the National Youth Policy of Nigeria identifies youths as persons between 18 and 35 years (Federal Republic of Nigeria, 2019). Despite such variations, youths are universally recognized as a dynamic group with creativity, energy, and the capacity to drive socio-economic development. Within this context, oil palm provides a strategic entry point for youth engagement owing to its year-round productivity, diverse downstream markets, and vast opportunities for value addition. However, effective participation of youths in the oil palm value chain is constrained by several challenges, including land tenure restrictions,

inadequate infrastructure, limited access to startup capital, and policy inconsistencies (Akinyosoye, 2021; Roundtable on Sustainable Palm Oil, 2024).

Oil palm (*Elaeis guineensis* Jacq.) is a perennial crop indigenous to West and Central Africa but now cultivated extensively in Southeast Asia and, increasingly, in parts of Africa and Latin America due to its unmatched oil yield per hectare and broad industrial applications. The crop produces both palm oil from the mesocarp and palm kernel oil from the seed, making it central to the global edible oil, biofuel, and oleochemical industries (Alhaji, 2024). Currently, Indonesia and Malaysia dominate global oil palm production, accounting for approximately 83–85% of total supply. Nigeria, once a leading producer, has experienced renewed growth in recent years through private sector investments and research support from the Nigerian Institute for Oil Palm Research (NIFOR) (United State Department of Agriculture, 2024; NIFOR, 2025).

Despite its economic significance, the oil palm sector faces persistent challenges, particularly deforestation, carbon emissions, and the marginalization of smallholders. These concerns have prompted the emergence of sustainability initiatives such as the Roundtable on Sustainable Palm Oil (RSPO) and compliance requirements under the European Union Deforestation Regulation (RSPO, 2024; EU, 2024). Recent research efforts have therefore focused on the development of high-yielding, climate-resilient varieties, replanting with improved germplasm, and the valorization of by-products as strategies to enhance sustainability and foster a more circular oil palm industry (Imran, 2025).

The oil palm value chain in Cross River State is among the most significant in Southern Nigeria, encompassing activities such as input supply, production, processing, marketing, and value addition (PZ-Wilmar, 2023). At the upstream stage, production is dominated by smallholder farmers who often manage semi-wild groves and small plots, while larger estates provide a smaller but more structured share of output. To boost productivity, the State government, in partnership with the Nigerian Institute for Oil Palm Research (NIFOR), has implemented farmer-profiling programs and distributed millions of improved sprouted nuts to increase yields and expand cultivated areas (CrossRiverWatch, 2024; CrossRiverWatch, 2025).

Midstream activities focus on processing fresh fruit bunches (FFBs) into crude palm oil (CPO) and palm kernel oil (PKO). Processing systems are highly heterogeneous, ranging from artisanal village mills and semi-mechanized units to modern industrial mills. While artisanal mills remain dominant in rural communities, they are constrained by low extraction rates, poor oil quality, and high post-harvest losses (Effiom, Ogar, and Bisong, 2016; Ogar, Effiom, and Abang, 2020). In contrast, industrial-scale processors such as PZ-Wilmar and Okomu Oil Palm Company employ advanced technologies and maintain vertically integrated operations that link plantations with refineries.

At the downstream stage, CPO and PKO are refined and fractionated into diverse value-added products, including cooking oil, margarine, soaps, detergents, cosmetics, pharmaceuticals, and biofuels. Distribution takes place through informal markets dominated by small traders as well as structured channels managed by larger firms. Recognizing the sector's importance, Nigeria's agro-industrial development strategy, supported by organizations such as the United Nations Industrial Development Organization (UNIDO), positions palm oil as a driver of industrialization and rural development (UNIDO, 2020).

Despite its socio-economic relevance, the Nigerian oil palm value chain continues to face persistent challenges such as low productivity, aging plantations, inadequate mechanization, weak infrastructure, policy inconsistencies, and sustainability concerns linked to deforestation and land-use change (Akinyosoye, 2021; RSPO, 2024). Within this context, the present study seeks to assess youths' participation in oil palm value chain activities in Akamkpa Local Government Area.

Materials and Methods

Study Area

This work was carried out in Akamkpa Local Government Area, Cross River State, Nigeria. The area is bounded by Biase to the west, Odukpani to the northwest, Calabar Municipality and Calabar South to the southwest, Etung and Ikom LGAs to the north, and Republic of Cameroon to the east. Akamkpa is endowed with rich natural resources, including vast forest reserves such as the Cross River-National Park (Oban Division), which is home to rare plant and animal species. The climate is typically humid tropical, with mean annual rainfall ranging from 2,500 mm to 3,000 mm and average temperatures between 25°C and 30°C, making the area favorable for agriculture (Cross River State Government, 2018).

Agriculture is the dominant economic activity, with most inhabitants engaged in farming, hunting, and fishing. Major crops cultivated include oil palm, cassava, yam, maize, plantain, and cocoa. In addition, Akamkpa is notable for its limestone deposits, which support quarrying and cement production industries, such as those operated by UNICEM (United Cement Company of Nigeria).

Sample Size and Sampling Technique

A multi-stage sampling procedure was employed in selecting respondents for the study. In the first stage, six (6) communities within the block were purposively selected due to their high level of involvement in oil palm activities. These communities included Old Netim, Ekpiri Iko, Mbarakom, Uyanga, Ehom, and Oban. The second stage involved the simple random selection of registered oil palm producers, processors, and marketers within these communities. In the third stage, simple random sampling was again applied to select 39 producers, 51 processors, and 32 marketers, giving a total sample size of 122 respondents.

Data for this study were collected using a combination of methods, including a semi-structured questionnaire administered to gather information from respondents, as well as in-depth interviews with producers, processors, and marketers to obtain more nuanced insights and contextual understanding. The distribution of respondents across categories is presented in Table 1.

Table 1: Distribution of sample by villages and categories

Communities	Category of Respondents	No. Reg. Members	No of Respondents Sampled (40%)
Old Netim	Producers	21	8
	Processors	22	9
	Marketers	18	7
Ehom	Producers	12	4
	Processors	20	8
	Marketers	17	6
Mbarakom	Producers	16	6
	Processors	18	7
	Marketers	12	4
Uyanga	Producers	20	8
	Processors	25	10
	Marketers	19	7
Ekpiri Iko	Producers	15	5
	Processors	19	7
	Marketers	11	2
Oban	Producers	20	8
	Processors	24	10
	Marketers	17	6
Grand Total	18	326	122

Source: Cross River Agricultural Project and Field Survey, 2025

Results and Discussions

Socio-Economic Characteristics of Respondents

The results in table 2 shows that the majority of the respondents (80%) were within the age range of 26-35 years, which represents individuals in their prime working years and implies a high level of productivity. This finding aligns with Ajibefun and Daramola (2003), who reported that individuals within this age cohort were actively involved in oil palm processing in Ondo State. The results further reveal that the majority of respondents were male (75%), suggesting that oil palm value chain activities in the study area are male-dominated. This agrees with Ajayi and Olaadele (2022), who reported that 64.2% of palm oil processors in Ogun State were male. Additionally, 66% of the respondents were married, which suggest that many of them had partners who could contribute to decision making and provide family labour to support oil palm value chain activities. This is consistent with Antia-Obong and Ekanem (2022), who indicated that marital status, with its associated family responsibilities and labour pool, supports active involvement in oil palm activities such as processing, marketing and storage. The results also indicated that (93%) of the respondents had some level of formal education, suggesting that they possessed basic literacy skills that could enhance their participation and performance in oil palm value chain activities. Moreover, 79% of the respondents were members of cooperative societies, which facilitates information sharing, idea exchange, and mutual support, thereby improving participation and performance in oil palm value chain activities. This finding is consistent with Olorunfemi *et al.*, (2024), who reported that cooperative membership significantly enhances farmers' economic benefits and involvement in oil palm value chain activities. Cooperative membership in the oil palm value chain has far-reaching implications, as it fosters collective action that enhances efficiency, market access, and value addition. For producers, cooperatives improve access to farm inputs, extension services, and credit, thereby boosting productivity and reducing production costs. Processors benefit from assured raw material supply, shared facilities, and adoption of better processing technologies, which enhance product quality and reduce waste. Marketers gain stronger bargaining power, reliable supply, and wider market opportunities, ensuring fair prices and better income. Overall, cooperative membership strengthens linkages among actors, minimizes exploitation by middlemen, promotes equitable distribution of benefits, and contributes to the socio-economic empowerment of members and rural community development.

Extent of youths' participation in oil palm value chain activities

The results in table 3 show the extent of youths' participation in oil palm value chain activities. Findings indicate that retailing of oil palm by-products ($m = 3.3$) ranked first, closely followed by storage and sales ($m = 3.2$) of palm oil products, threshing ($m = 3.1$), harvesting ($m = 3.0$), transportation ($m = 3.0$), storage of oil in cans ($m = 3.0$), pressing/milling ($m = 2.8$), fermentation ($m = 2.8$), marketing of by-products ($m = 2.8$), an wholesaling ($m = 2.6$) as the most prominent activities in the study area. These results suggest that youths dominate the processing and marketing segments of the oil palm value chain in the study area. The findings are consistent with Ajibefun and Daramola (2023), who reported high youth involvement in oil palm processing activities in southwestern Nigeria. Similarly, Basse and Effiom (2025) confirmed that youths are major stakeholders in both processing and marketing of oil palm products, while Adefalu and Akinola (2022) found significant youth participation in small-scale processing and marketing of oil palm value chain activities, particularly in processing and marketing, which are critical links that add value and enhance product distribution. However, their full potential in transforming the sector can only be realized through improved access to skills development, modern

processing technologies, affordable credit, and supportive infrastructure, which would boost efficiency, profitability, and sustainable participation.

Table 2: Distribution of respondents according to socio-economic characteristics (N=122)

Variables	Category	Frequency	Percentage
Age	20-25	25	20
	26-30	22	18
	31-35	75	62
Sex	Male	92	75
	Female	30	25
Marital Status	Single	22	18
	Married	80	66
	Divorced	05	04
	Widowed	15	12
Education	Non-formal	08	07
	Primary	14	11
	Secondary	70	57
	Tertiary	30	25
Occupation	Farming	84	69
	Trader	20	16
	Civil servant	06	05
	Others	12	10
Membership of Cooperative	Yes	96	79
	No	26	21
Years of Experience	1-5	38	31
	6-10	72	59
	11-15	12	10

Source: Field Survey, 2025

Table 3: Extent of youths' participation in oil palm value chain activities

Variables	Often	Occasionally	Rarely	Not at all	Mean	Rank
Production Activities						
Nursery	42.0	28.0	40.0	12.0	2.8*	6 th
Transplanting	10.0	22.0	41.0	49.0	1.9	12 th
Fertilizer application	08.0	12.0	20.0	82.0	1.6	13 th
Chemical application	20.0	42.0	22.0	38.0	2.2	9 th
Pruning	02.0	20.0	20.0	80.0	1.5	14 th
Harvesting	48.0	34.0	32.0	08.0	3.0*	4 th
Transportation	62.0	21.0	19.0	20.0	3.0*	4 th
Processing Activities						
Threshing	52.0	40.0	15.0	15.0	3.1*	3 rd
Fermentation	50.0	22.0	36.0	14.0	2.9*	5 th
Boiling	12.0	20.0	54.0	36.0	2.1	10 th
Pressing/Milling	48.0	34.0	18.0	22.0	2.9*	5 th
Cooking the oil	18.0	19.0	43.0	42.0	2.1	10 th
Separating oil and the water	20.0	17.0	33.0	52.0	2.0	11 th
Storing the oil in cans	55.0	27.0	28.0	12.0	3.0*	4 th
Marketing Activities						
Retailing	62.0	40.0	12.0	08.0	3.3*	1 st
Wholesaling	38.0	24.0	30.0	30.0	2.6*	8 th
Export	00.0	02.0	00.0	100.0	0.9	15 th
Purchase of planting material	48.0	32.0	28.0	14.0	2.9*	5 th
Purchase of by-products	38.0	34.0	21.0	29.0	2.7*	7 th
Marketing of by-products	43.0	37.0	16.0	26.0	2.8*	6 th
Storage and sale	62.0	40.0	08.0	12.0	3.2*	2 nd

Mean values above critical value of 2.5
 Source: Field Survey, 2025

Perception of youths' involvement in oil palm value chain

The perception of young people regarding oil palm value chain activities significantly shapes their willingness to participate. As presented in table 4, the majority of respondents agreed (m = 3.0) that the oil palm value chain activities reduce poverty, enhances productivity through youth participation, and creates awareness of improved farming technologies. These positive perceptions serve as strong motivators for youth involvement in value chain activities. Furthermore, respondents perceived the oil palm value chain as both lucrative and capital-intensive enterprise (m = 2.9). They also agreed that participation has the potential to drastically reduce unemployment (m = 2.8) and noted that value chain activities are primarily concentrated in agrarian communities (m = 2.7). This result agrees with Olajide (2021), who reported that youths perceived oil palm value chain activities as a viable means of reducing poverty and unemployment, while also contributing to economic growth and rural development. The implication of the results is that youths' positive perceptions of the oil palm value chain as a poverty reducing, employment generating, and lucrative enterprise serve as strong motivators for their participation, suggesting that enhancing awareness, access to capital, and supportive infrastructure could further increase their involvement and productivity in the sector.

Table 4: Distribution of respondents based on their perception about their involvement oil palm value chain

Variables	SA	A	D	SD	Mean	Rank
Oil palm value chain reduces poverty	62.0	23.0	17.0	20.0	3.0*	1 st
Oil palm value chain is capital intensive	54.0	28.0	13.0	27.0	2.9*	2 nd
It can solve the problem of food shortage	09.0	33.0	50.0	30.0	2.2	6 th
It is a lucrative business	46.0	36.0	17.0	23.0	2.9*	2 nd
It can help reduce unemployment drastically	39.0	42.0	21.0	20.0	2.8*	3 rd
The activities are concentrated in agrarian areas	39.0		33.0	28.0	22.0	2.7* 4 th
The activities do not benefit the youths	16.0	28.0	48.0	30.0	2.2	6 th
Youth participation increases productivity	41.0	51.0	22.0	08.0	3.0*	1 st
The activities cannot improve standard of living	15.0		34.0	55.0	18.0	2.4 5 th
Participation creates awareness on oil palm	39.0	51.0	21.0	11.0	3.0*	1 st

Farming technologies

*Mean values above critical value of 2.5

Source: Field Survey, 2025

Constraints affecting youths' participation in oil palm value chain activities

The results presented in Table 5 reveal that the majority of respondents identified high cost of labour, land tenure system, and scarcity of labour (m = 3.0) as very serious constraints to youth participation in the oil palm value chain. Other notable challenges include the prevalence of aging oil palm stands and poor access road networks (m = 2.8), which hinder effective production and distribution. Furthermore, respondents highlighted inadequate storage facilities (m = 2.7), inadequate capital, and low soil fertility (m = 2.6) as additional constraints influencing youth engagement in oil palm value chain activities in the study area. The findings of this study are consistent with the following empirical evidence. For instance,

high cost of labour, uncertain land tenure systems, ageing palm stands, and poor road infrastructure were reported as major challenges affecting oil palm value chain activities in Nigeria (Akinbile and Salami, 2021). Similarly, inadequate storage facilities, limited access to capital, and lack of modern processing equipment have been found to hinder efficient production and youth participation in the oil palm value chain sector (Nwachukwu, 2022). Moreover, labour scarcity and poor transport facilities were identified as significant barriers to oil palm processing and marketing in Osun State (Oladimeji *et al.*, 2023).

The implication of the result is that the persistence of labour shortages, insecure land tenure, ageing plantations, poor infrastructure, inadequate storage, insufficient capital, and low soil fertility creates significant barriers to youth participation in the oil palm value chain activities, thereby limiting productivity and discouraging long-term investment; hence, addressing these structural challenges through policy reforms, improved credit access, and infrastructural development is critical for enhancing youth engagement and the overall competitiveness of the sector.

Table 5: Distribution of respondents based on constraints affecting their participation in oil palm value chain

Factors	SA	A	D	SD	Mean	Rank
High cost of labour	50.0	32.0	29.0	11.0	3.0*	1 st
Low soil fertility	30.0	38.0	34.0	20.0	2.6*	4 th
Inadequate storage facilities	36.0	34.0	26.0	26.0	2.7*	3 rd
Poor access road network	42.0	30.0	30.0	20.0	2.8*	2 nd
Climate change and rainfall pattern	29.0	23.0	42.0	28.0	2.4	5 th
High cost of transportation	13.0	29.0	20.0	60.0	2.0	6 th
Aging palm	44.0	30.0	28.0	20.0	2.8*	2 nd
Land tenure system	62.0	20.0	18.0	22.0	3.0*	1 st
Scarcity in labour	60.0	22.0	16.0	24.0	3.0*	1 st
Poor market network	22.0	30.0	42.0	28.0	2.4	5 th
Poor extension services	12.0	20.0	50.0	40.0	2.0	6 th
Inadequate capital	40.0	32.0	10.0	40.0	2.6*	4 th

*Mean values above critical value of 2.5

Source: Field Survey, 2025

Conclusion

The study examined the participation of youths in the oil palm value chain and revealed that respondents were predominantly within their prime productive age (26–35 years), male, married, and largely educated, with significant membership in cooperative societies. These socio-demographic characteristics enhanced their involvement across different segments of the value chain, particularly in processing and marketing activities. However, challenges such as high labour costs, land tenure constraints, poor infrastructure, and inadequate capital were identified as major limitations to youths' effective participation. Overall, the findings underscore that youths are critical drivers of oil palm value chain development, but their full potential can only be harnessed through improved access to skills, credit, technology, and supportive institutional frameworks. Strengthening these areas will not only enhance youth participation but also contribute significantly to poverty reduction, job creation, and sustainable agricultural development in Nigeria.

Recommendations

Based on the findings, the following recommendations are made:

1. Enhance access to credit and land by creating youth-friendly financial schemes and implementing land reforms that reduce tenure constraints.
2. Strengthen cooperative societies as platforms for information exchange, resource pooling, and collective empowerment of youths in the oil palm value chain.
3. Invest in infrastructure and technology, including roads, storage facilities, and affordable labour-saving innovations, to improve efficiency and reduce post-harvest losses.
4. Promote capacity building through training on modern oil palm technologies, processing, and agribusiness skills to boost youth productivity and competitiveness.

Reference

- Adefalu, L. L., & Akinola, F. A. (2022). Entrepreneurial performance of oil palm processors in Ekiti State, Nigeria. *Zibeline International Journal of Business and Management*, 3(2), 63–66. Retrieved from <https://ideas.repec.org/a/zib/zbfabm/v3y2022i2p63-66.html>
- African Union. (2006). African Youth Charter. Addis Ababa: African Union. Retrieved from <https://au.int/en/treaties/african-youth-charter>
- Alhaji, A.M. (2024). Palm Oil (*Elaeis guineensis*): A Journey through Sustainability and Industrial Applications. *Foods*, 13(17), 2814.
- Ajayi, O. J., & Oladele, O. I. (2022). Awareness and adoption of improved palm oil processing technologies in Ogun State, Nigeria. *Journal of Agricultural Extension*, 26(4), 45–56.
- Ajibefun, I. A., & Daramola, A. G. (2003). Efficiency of microenterprises in the Nigerian economy. *African Development Review*, 15(2–3), 259–273
- Akinbile, L. A., & Salami, R. A. (2021). Building the palm oil value chain: Challenges and opportunities in Nigeria. *The Nation Newspaper*. Retrieved from <https://thenationonlineng.net/building-palm-oil-value-chain>
- Akinyosoye, V. O. (2021). The political economy of palm oil production in Nigeria. *Journal of Development Policy and Practice*, 6(1), 45–62.
- Antia-Obong, O. E., & Ekanem, A. M. (2022). Women participation in oil palm value chain in Akwa Ibom State, Nigeria. *Canadian Journal of Agriculture and Crops*, 7(2), 105–111. <https://doi.org/10.20448/803.7.2.105.111>
- Bassey, I. E., & Effiom, V. A. (2025). Technical skills required by youths for self-reliance in oil palm production, processing and marketing in Cross River State, Nigeria. *Al-Hikmah Journal of Agricultural Education*, 2(1), 44–59. Retrieved from https://alhikmahuniversity.edu.ng/hui_aje/index.php/journal/article/view/152
- Cross River State Government. (2018). Cross River State Statistical Yearbook. Calabar: *Ministry of Finance, Budget and Planning*.
- CrossRiverWatch. (2024). Cross River Begins Profiling of Farmers to Improve Palm Oil Production. Retrieved from <https://crossriverwatch.com>
- CrossRiverWatch. (2025). Cross River State Procures 3.5 Million Sprouted Oil Palm Nuts from NIFOR. Retrieved from <https://crossriverwatch.com>
- Effiom, D. O., Ogar, J. O., & Bisong, F. E. (2016). Assessment of oil palm processing in Biase Local Government Area of Cross River State, Nigeria. *Journal of Agricultural and Rural Development*, 16(2), 45–52.
- European Union. (2024). EU Deforestation Regulation (EUDR), Official Journal of the European Union.

- Federal Republic of Nigeria. (2019). National Youth Policy of Nigeria: Enhancing Youth Development and Participation in the Context of Sustainable Development. *Abuja: Federal Ministry of Youth and Sports Development.*
- Imran, M. (2025). Genetic and Metabolic Engineering of Oleic Acid Synthesis in *Elaeis guineensis*. *Plant Physiology and Biochemistry.*
- Kimaro, P. J., Towo, N. N. and Moshi, B. H. (2015). Determinants of rural youth's participation in agricultural activities: the case of Kahe East ward in Moshi rural district, Tanzania. *International Journal of Economics, Commerce and Management.* 3(2), 1-47.
- Nwachukwu, C. A. (2022). Challenges facing palm oil processors in Ebonyi State, Nigeria. *Journal of Agricultural Extension and Rural Development*, 14(3), 45–53.
- Nigerian Institute for Oil Palm Research (NIFOR). (2023). Annual report on oil palm research and development in Nigeria. Benin City: NIFOR.
- National Population Commission (NPC). (2006). Population and Housing Census of the Federal Republic of Nigeria: *National and State Population and Housing Tables.* Abuja: NPC.
- NIFOR. (2025). Nigerian Institute for Oil Palm Research. <https://nifor.gov.ng>
- Ogar, J. O., Effiom, D. O., & Abang, S. O. (2020). Analysis of small-scale palm oil processing activities in Boki Local Government Area, Cross River State, Nigeria. *International Journal of Agricultural Research and Innovation*, 8(1), 23–31.
- Oladimeji, Y. U., Adebayo, O. O., & Adepoju, A. O. (2023). Constraints to palm oil processing and marketing among smallholder farmers in Osun State, Nigeria. *Nigerian Journal of Rural Extension and Development*, 17(2), 85–94. Retrieved from
- Olajide, B. R. (2021). Oil palm plantations and rural development in South-West Nigeria: Stakeholders' perceptions and implications for poverty alleviation. *Economy of Regions*, 17(2), 369–381. <https://doi.org/10.17059/ekon.reg.2021-2-3>
- Olorunfemi, O. D., Mohammed, I., & Adejoh, S. O. (2024). Socio-economic benefits of oil palm value chain enterprises in rural areas of Kogi State, Nigeria. *Journal of Agriculture and Food Security*, 6(1), 22–34.
- PZ-Wilmar. (2023). Sustainable Oil Palm Development in Nigeria. Lagos: PZ Wilmar Nigeria Ltd.
- RSPO. (2024). RSPO Impact Report 2024. Roundtable on Sustainable Palm Oil.
- Sule, I. M., Yahaya, M. A., & Oladipo, S. E. (2021). Value chain analysis of palm oil in Nigeria: Opportunities and constraints. *Journal of Agribusiness and Rural Development*, 59(1).
- USDA Foreign Agricultural Service. (2024). Nigeria Oilseeds and Products Annual. U.S. Department of Agriculture.