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ASSESSMENT OF SMALLHOLDER OIL PALM FARMERS' CAPABILITY TO SUPPLY OIL PALM FRUITS FOR PRODUCTION OF SPECIAL PALM OIL IN NIGERIA

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Abstract: This study employs a cross-sectional design to examine factors essential for enabling smallholder farmers to provide the necessary quality and quantity of fresh oil palm fruits for producing special palm oil in Nigeria. We utilized proper sample sizes and a multi-stage sampling technique for respondent selection (stage 1 - zoning, stage 2 - identifying available farmers in each state, and stage 3 - applying Slovin's formula for respondent selection).

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Surveys were distributed to 528 farmers across six palm oil-producing states. The findings indicate that farmers take an average of three days to transport fresh fruit bunches to processing facilities, adversely affecting the volume available for special palm oil production. Factors such as access to information, membership in organizations, and education level were identified as critical to improving farmers' capabilities in the supply chain. Consequently, the study recommends that key stakeholders enhance extension services provided to farmers.

Key words: *Extension education, Smallholder farmers, fruit production, quantity and quality, special palm oil.*

INTRODUCTION

The oil palm is a critical agricultural crop for vegetable oil production [1], boasting a significant yield of approximately 5 tons of palm oil per hectare [2]. It thrives in 20 states across Nigeria, predominantly within the rainforest and derived savannah zones, marking it as the leading oil-bearing crop in terms of direct consumption and processing into oil and cake. The processing of ripe fresh fruit bunches from the oil palm tree yields three commercial products: crude red palm oil, palm kernel oil, and palm kernel cake (or meal). Palm oil serves as the primary cooking oil in Nigerian cuisine, essential for preparing soups and various food items [3].

After bleaching and refining, palm oil finds broader applications in the production of margarine, confectionery, ice creams, soap, and substitutes for filled milk or cocoa butter. Palm kernel oil is utilized in creating artificial cream fillings, soap, cosmetics, personal care products, emulsifiers for food processing and pharmaceuticals, and in the manufacture of toiletries, tobacco products, alkyd resins, paints, varnishes, cellophane, explosives, and polyurethane. Palm kernel cake, on the other hand, is valued as livestock feed, highlighting the oil palm's versatile role in both the agricultural and industrial sectors [1,3,4,5].

Except for a few large and medium-scale plants, oil palm fruit bunches harvested by farmers are usually processed into technical palm oil (TPO), which is of low quality (with free fatty acid and moisture content of more than 3 and 1%, respectively). This category of palm oil finds limited uses in food and agro-allied industries. Special palm oil (SPO) is a palm oil of high quality with free fatty acid and moisture content of less than 5% and 1%, respectively. This grade of palm oil is the best for food processing industries and is usually in high demand by the large-scale food and applied processing industries [4,5].

Most industries forced to purchase TPO (due to insufficient special palm oil) undergo extra cost of refining the oil to usable form that can fit into their applications. Special palm oil production is low due to the fact the available few oil palm estate owners are only the key actors leading to the production of crude palm oil with less or equal to 5% Free Fatty Acid [4].

From being one of the leading exporters of crude palm oil in the 1960s, Nigeria is now a net importer. PwC reported that the importation of crude palm oil to supplement local production between 2014 and 2018 is in the range of US$1.28 billion [6].

The importation of the product increased to US$186.9 billion between 2017 to 2022 [7]. Furthermore, with the growing population of the country (about 200 million), the vegetable oils and fats required to support the populace are in the region of 2.34 million metric tons annually. It is astonishing to discover that the country also imports considerable quantity of Indonesia palm oil and that of neighbouring West African countries such as Benin, Togo, and Ivory Coast [8].

In a bid to close the supply gap and encourage local investment, the Federal Government put in place some policy measures, including refined palm oil as one of the items that importers are restricted from accessing foreign exchange at the interbank market, increasing the duty charge on crude palm oil, the establishment of special borrowers programme to make framers have access to a loan at low-interest and listing of palm oil as a commodity of priority support for the Central Bank of Nigeria, among others. It is opined that with these efforts, the production of fresh palm fruit bunches to support the production of special palm oil will be enhanced. It, therefore, becomes imperative to ascertain the current capacity of the farmers in terms of technical know-how and material resources in this regard. Accordingly, farmer and farm-related characteristics are interrogated to assess the capability of the farmers to contribute to filling the SPO supply gap in Nigeria.

Prior to the emergence of Special Palm Oil (SPO), Nigeria's palm oil production was limited to Technical Palm Oil (TPO), catering exclusively to domestic consumption. With the onset of industrialization, the demand for SPO surged, prompting a shift in production practices. This transition required farmers to adapt to new methodologies for producing and delivering fresh fruit bunches suitable for SPO, marking a significant departure from traditional TPO production techniques. These novel conditions, introduced to smallholder farmers since the 1960s—the period signifying the start of industrialization in Nigeria—entail substantial changes in agricultural practices. The ongoing effort to communicate these updated practices underscores the critical need for enhancing farmer capabilities and leveraging technological advancements. This study aims to thoroughly investigate the impact of these advancements and the capacity of farmers to boost the productivity and sustainability of SPO production in Nigeria. It seeks to identify effective strategies to address the sector's challenges, thereby facilitating a smoother transition towards more advanced and efficient production methodologies in the context of a rapidly industrializing agricultural landscape.

MATERIAL AND METHOD

This study was conducted in six selected states in Nigeria (Akwa Ibom, Edo, Imo, Kogi, Ondo, and Osun). The states were purposefully selected among the palm oil states in Nigeria based on the high density of the palm. The standard formula for calculating the minimum sample size when the universe contains 10,000 objects or more was used to select the respondents [9]. The formula is presented in Equation 1.

$$n = \frac{z^2 pq}{d^2} \qquad \text{……..……(1)}$$

Based on available data on the population of oil palm fruit processors in each state, a total of 528 farmers were selected as respondents.

The instrument used for data collection is a well-structured, validated questionnaire supported by a field observation checklist. The questionnaire elicits information on the demographic characteristics, ownership of the mill, number of male and female dependents, mode of land acquisition for plantation, oil palm fruits processing, sales of products, and awareness about SPO among others.

The checklist was to obtain information on sequential and procedural steps of various relevant operations. Data were collated through Epidata and analyzed with the Statistical Package for the Social Sciences. Descriptive statistics such as frequency count and percentage were used to describe the data while cross-tabulation and Chi-Square analysis were used to make deductions.

RESULTS AND DISCUSSION

Farmer-related characteristics

Table 1 presents a detailed grasp of the socio-demographic profiles and operational circumstances of oil palm farmers in selected Nigerian states, offering insights into the challenges and opportunities within the sector. It was observed that 22% of the respondents were between the ages of 30 – 39 years, while 29% indicated that their ages were between 40 – 49 years, 23.7% were between the ages of 51 – 59 years and 19.4% were 60 years, and above. The age distribution of respondents underscores a mature farmer demographic, with a substantial portion aged 40 years and above, suggesting that a significant number of farmers may face physical constraints in engaging in labor-intensive activities such as cutting palm groves and transporting fruit bunches. This observation raises concerns about the sustainability of labor inputs and the potential need for mechanization or younger labor forces to maintain production levels, [10].

Marital status and gender distribution data reveal a predominance of married male respondents, highlighting the gendered nature of oil palm farming in the region. Majority (88.3%) of the respondents were married, 38(7%) never married, while 22(4.1%) and 3(0.6%) were widowed and separated, respectively. Many (74.6%) of the respondents were male while 25.4% were female. This gender imbalance reflects broader societal norms and potentially points to gender inequalities in access to resources, decision-making, and opportunities within the agricultural sector. Moreover, gender roles differ at various stages in the cultivation of oil palms. While the processing of palm fruits is often considered a women's industry, men's increased participation in off-farm work is attributed to the relative labour efficiency of oil palm compared to other crops, [11].

Educational attainment among the farmers shows a spectrum from no formal education to tertiary certificates. Only 8.4% of the respondents had no formal education, 30% had First School Leaving Certificate, 39% had West African Education Certificate and 10.1% had tertiary certificates. While the majority have received some form of formal education, the variation in educational levels may affect their capacity to adopt new technologies, comply with SPO production standards, and engage with complex market or regulatory environments.

The household composition, characterized by an equal distribution of male and female children, alongside a high dependency on household labor, reflects traditional family structures. There was a fairly equal distribution of male and female children within respondents' households, as the majority (78.1%) of the respondents had a house size within the range of 1 to 4 males and 72.5% had the same range for female children. This reliance on family labor for farm operations is a common feature in West Africa [12], emphasizing the need for strategies to enhance labor efficiency and manage the timely transportation of fresh fruit bunches to processing centers critical for SPO production which requires processing within 24 hours of harvesting. The equal distribution of male and female children within households is consistent with anthropologists' claim that the human population is equally distributed between males and females, [13]. It enables farms with limited mechanization and cash to hire labour to ensure the timely evacuation of fresh fruit bunches from their respective farms to the nearby processing centres. Evidence has suggested that one of the great obstacles to the production of SPO in Nigeria is the delay between harvesting and processing centres, [5]. Production of SPO requires among others the processing of fresh bunch within 24 hours of harvesting.

Table 1. Distribution of the socio-demographic characteristics of respondents

Parameters	Frequency	Percentage
Age group (in 10 years)		
<30yrs	32	5.9
30-39yrs	119	22
40-49yrs	157	29
50-59yrs	128	23.7
60yrs+	105	19.4
Total	541	100
Marital status		
Never married	38	7
Married	477	88.3
Widowed	22	4.1
Separated	3	0.6
Contin. Table 1.		
Total	540	100
Sex		
Female	140	25.4
Male	411	74.6
Total	551	100
Highest qualification obtained		
None	44	8.4
FSLC	158	30.2
WAEC/NECO	204	39
ND	28	5.4
HND	36	6.9
BSc.	43	8.2
MSc.	9	1.7
PhD	1	0.2
Total	523	100

Contin. Table 1.			
Household size			
Number of Females	1 – 4	377	72.5
5+		142	27.3
Total		520	100
Number of Male	1 – 4	407	78.1
5+		114	21.9
Total		521	100
The Average income per annum			
From Primary			
100000-500000		56	12.7
500001-1000000		52	11.8
1000000+		332	75.5
Total		440	100
From Occupation			
50000-500000		58	21.7
500001-1000000		72	27
1000000+		137	51.3
Total		267	100
Membership of any Organization	No	245	46.4
Yes		283	53.6
Total		528	100
Farm Ownership			
Government-owned		26	4.7
Single privately owned		222	40.2
Cooperatively-owned		13	2.4
Our family-owned it		32	5.8
My Inheritance		64	11.6
I planted/purchased it		81	14.7
I got it through a lease		97	17.6
Gift		9	1.6
Others		8	1.4
Total		552	100

The economic insights, indicating oil palm farming as the primary occupation for more than half of the respondents with an average annual income of ₦1,000,000, suggest that oil palm farming represents a significant livelihood source. However, the income level also points to the economic vulnerabilities and the importance of improving productivity and market access to enhance incomes. A higher percentage (53.6%) of the respondents were members of an organization, just as 47.6% and 38.9% were ordinary and executive members, respectively. Membership in organizations is notably high, suggesting a potential avenue for collective action, knowledge sharing, and support. This organizational involvement could be leveraged to facilitate access to credit, inputs, and training, addressing some of the production and marketing challenges faced by farmers.

About 40.2% of the respondents were operating on a single-privately owned oil palm farm. This is the highest category among the ownership types.

Hence, it could be concluded that the plantations are mainly owned by individuals in the community.

Spatial arrangement and selection of appropriate land capabilities are needed to control the productivity of oil palm plantations, [14].
Few (11.6%) of the respondents inherited oil palm farm, 17.6% got it through a lease just as 14.7% and 5.8% operated the farm as a purchased and family-owned venture, respectively. Land ownership patterns, with a significant proportion of respondents operating on single-privately owned farms, highlight the importance of land management practices in optimizing productivity. The findings suggest that strategic land selection and spatial arrangement are critical for enhancing the productivity of oil palm plantations.

Oil palm farm-related characteristics

The data from Table 2 provides insightful details about the characteristics of oil palm farms, including land type, variety of oil palm trees, and harvesting frequency, which are essential factors influencing the productivity and quality of oil palm production.

A significant proportion of respondents (33.2%) have their oil palm farms located in forest areas, while 28.8% are situated in lands previously used for arable crops. This distribution suggests a reliance on diverse ecological zones for oil palm cultivation, each with its unique advantages and challenges. The existence of 22.3% of farms as pre-established plantations and 11.8% alongside other tree crops indicates a blend of monoculture and intercropping practices among the farmers. The small percentage (3.8%) of farms located on abandoned lands could imply either a limited availability of such lands or a preference for more fertile and established farming areas.

The nearly equal distribution of *Dura* (thick shell, 49.8%) and *Tenera* (thin shell, 48%) varieties among the farms indicates a diverse genetic base. While these varieties are advantageous in certain aspects, they have relatively lower oil content compared to the *Pisifera* variety (shell-less) [15]. This diversity in varieties could impact the overall oil yield and quality. The majority of respondents (67.8%) reported a monthly harvesting cycle, which could be influenced by factors such as labor availability, farm size, and the maturity period of the fruits. The less frequent harvesting cycles (fortnightly: 22.2%, bimonthly: 5.3%, quarterly: 4.7%) might affect the freshness of the fruit, which is crucial for the quality of palm oil, especially for Special Palm Oil (SPO) production that requires processing within 24 hours of harvesting.

Table 2. Land Description and Farm Properties

The land upon which your oil palms grow was previously	Frequency	Percentage
Forest	174	33.2
Abandoned land	20	3.8
Oil Palm plantations	117	22.3
Other tree crops	62	11.8
Arabic crop farm	151	28.8
Total	524	100
Age of oil palms farm under control		
1-10yrs	156	29.8
11-20yrs	200	38.2
21-30yrs	81	15.5
31yrs+	86	16.4
Total	523	100

Contin. Table 2. Types of fruits are found on oil palm under your control		
Thick shell	274	49.8
Hybrid	264	48
No shell	12	2.2
Total	550	100
How often do you harvest your palm fruit		
Fortnightly	122	22.2
Monthly	372	67.8
Bimonthly	29	5.3
Quarterly	26	4.7
Total	549	100

Implications for oil palm production

1. The choice of land type and farm location reflects the farmers' knowledge and strategic decisions regarding optimal conditions for oil palm cultivation. This aspect is critical for ensuring the sustainability and environmental impact of oil palm farming.
2. The prevalence of *Dura* and *Tenera* varieties suggests a potential need for agricultural extension services to guide farmers in selecting high-yielding and disease-resistant varieties to maximize oil production.
3. The harvesting frequency data indicates a need for improved logistics and processing capabilities to ensure that the harvested fruits are processed timely, thereby enhancing the quality of the palm oil produced.

A notable 65.22% of respondents reported spending less than one hundred thousand Nigerian Naira on planting materials from research stations, indicating a preference or reliance on research-based sources for quality planting materials. This reflects an understanding among a majority of farmers of the importance of using scientifically developed and certified seeds or seedlings for enhancing farm productivity. Conversely, lower percentages of respondents spent the same amount on planting materials from nearby farms (43.75%), neighbor farms (26.83%), and nearby forests (28.85%). This variance in spending patterns across different sources suggests differing perceptions of value, accessibility, or quality of planting materials obtained from non-research sources.

The reliance on research stations by a significant portion of respondents underscores the recognized value of improved planting materials in achieving higher yields and disease resistance. In the past five decades, research and development (R&D) activities, coupled with technological advancements, have significantly contributed to increased agricultural yields in Malaysia, [16]. Research stations are likely to provide genetically improved varieties that can enhance oil palm productivity. The engagement with nearby farms, neighbor farms, and forests as sources for planting materials, albeit to a lesser extent, might be influenced by factors such as cost, convenience, and traditional practices. However, the lower spending on materials from these sources could also imply concerns about the quality or productivity potential of the materials obtained.

Table 3. Source of planting material and how much spend on the farm under control.

Sources of Planting Material	How much Spend on Farm under Control				
		<100000	100001-500000	500000+	Total
Research Station	NO	24(34.78)	18(28.13)	4(19.05)	46(29.87)
	YES	45(65.22)	46(71.88)	17(80.95)	108(70.13)
Total		69	64	21	154
Nearby Farm	NO	25(33.78)	28(43.75)	7(46.67)	60(39.22)
	YES	49(43.75)	36(56.25)	8(53.33)	93(60.78)
Total		74	64	15	153
Neighbour	NO	30(73.17)	31(77.50)	9(81.82)	70(76.09)
	YES	11(26.83)	9(22.50)	2(18.18)	22(23.91)
Total		41	40	11	92
Nearby Forest	NO	37(71.15)	31(53.45)	9(100.00)	77(64.71)
	YES	15(28.85)	27(46.55)	0(0.00)	42(35.29)
Total		52	58	9	119

Implications for policy and practice

1. The findings suggest a need for policies and programs that ensure the availability and accessibility of high-quality planting materials from research stations to a wider range of farmers. Enhancing farmers' access to improved varieties could significantly contribute to increasing the productivity and sustainability of the oil palm sector, [17].
2. Additionally, there is an opportunity for agricultural extension services to provide education and awareness about the benefits of using quality planting materials. Such initiatives could help bridge the gap between research and practice, encouraging more farmers to invest in improved varieties.
3. The result also highlights the importance of establishing robust quality control mechanisms for planting materials sourced from informal channels (e.g., nearby farms and forests) to ensure they meet certain productivity and health standards. This could involve certification schemes or guidelines for the collection and distribution of planting materials.

Table 4 provides an overview of the condition of farming implements across different ownership models of oil palm plantations, revealing insights into the operational efficiency and maintenance practices within the sector.

A significant majority of respondents (63.64% for government-owned and 62.04% for single-privately owned) reported that implements were in good condition. This high percentage suggests effective maintenance and possibly better access to resources for repairs and replacements in these ownership categories. The good condition of government-owned implements may reflect well-structured maintenance programs, while the similar condition of single-privately owned implements indicates individual commitment to sustaining operational efficiency.

Table 4. Ownership of Plantation and Efficiency of the Equipment

Ownership of Plantation	The efficiency of the Equipment			
	Poor	Fair	Good	Total
Government-owned	1(9.09)	3(27.27)	7(63.64)	11
Singe Privately Owned	5(4.63)	36(33.33)	67(62.04)	108
Cooperatively-owned	0(0.00)	4(100.00)	0(0.00)	4
Our Family-Owned it	1(5.26)	7(36.84)	11(57.89)	19
Inheritance	9(40.91)	6(27.27)	7(31.82)	22
Planted/Purchase	3(7.14)	16(38.10)	23(54.76)	42
Through Lease	0(0.00)	38(42.70)	51(57.30)	89
Gift	0(0.00)	0(0.00)	2(100.00)	2
Others	1(20.00)	3(60.00)	1(20.00)	5
Total	20(6.62)	113(37.42)	169(55.96)	302

Notably, none (0.0%) of the respondents reported good condition for cooperatively owned implements, with all indicating a fair condition. This stark difference could imply challenges in collective management and maintenance of equipment, possibly due to resource constraints or coordination difficulties within cooperative structures. A majority (57.89%) considered family-owned implements to be in good condition, suggesting that these implements receive adequate care, possibly due to the direct involvement and vested interest of family members in the plantation's success. In contrast, only a minority (31.82%) reported that inherited implements were in good condition, which may point to challenges in maintaining older equipment passed down through generations or possibly a lack of investment in upgrading such implements.

Over half (54.76%) of the respondents indicated that purchased implements were in good working condition. This finding could reflect the tendency to invest in quality equipment when purchasing new or the prioritization of maintenance for assets directly acquired through personal investment. Implements acquired through lease were reported to be in good condition by a significant majority (57.30%), likely due to lease agreements stipulating maintenance responsibilities or the lessees' motivation to maintain the equipment well to ensure operational efficiency. Interestingly, all implements received as gifts were reported to be in good condition, though this category had a very small sample size (100%), making it difficult to draw broad conclusions.

Implications for agricultural productivity

1. The condition of farming implements is crucial for operational efficiency and productivity in oil palm cultivation. The data suggests that ownership type impacts the condition of implements, with government and single privately owned equipment generally in better condition than those owned cooperatively or inherited.
2. The challenges highlighted in maintaining cooperatively owned and inherited implements point to the need for targeted interventions, such as cooperative management training programs or financial support for equipment upgrades, to ensure these groups can maintain or improve their operational efficiency.
3. Enhancing access to quality implements and establishing robust maintenance practices across all ownership types are essential steps toward boosting productivity and sustainability in the oil palm sector.

Addressing these needs through policy support, extension services, and financial mechanisms could significantly impact the sector's overall performance and contribution to the economy.

Table 5 provides crucial insights into the logistics of transporting fresh oil palm fruit bunches to processing centers, focusing on the distance from the farm to the processing center and the duration it takes for evacuation. This logistical aspect is critical for maintaining the quality of palm oil, as the freshness of the fruit bunches significantly influences oil yield and quality.

Table 5. Processing Center Distance and Days it takes to Evacuate the Fruit

Processing Center Distance from Farm	Days it takes to Evacuate Fruit		
	< 5days	6 days+	Total
(1-10) kilometer	297(75.77)	95(24.23)	392
(11-20) kilometer	22(78.57)	6(21.43)	28
(21-30) kilometer	8(80.00)	2(20.00)	10
31+ kilometer	5(71.43)	2(28.57)	7
Total	332(75.97)	105(24.03)	437

The data indicates that a significant majority (75.77%) of the respondents' farms are located within 1 to 10 kilometers of an oil palm fruit processing center, and these farmers manage to transport their produce in less than 5 days.
This proximity and timely transportation are advantageous for maintaining the quality of the fruit bunches, as shorter distances and evacuation times reduce the risk of fruit spoilage and degradation, which can affect the quality of the oil produced.

Despite the majority managing to evacuate their produce in less than 5 days, there is still a notable portion (24.23%) within the same 1 to 10 kilometers range who take 6 days or more for evacuation. This delay, even over relatively short distances, suggests potential challenges in transportation logistics, labor availability, or farm management practices that could hinder timely delivery to processing centers.

For distances beyond 10 kilometers, the proportion of farmers who take longer to evacuate the fruit slightly decreases, which might seem counterintuitive. This could indicate that farmers situated further from processing centers may plan more efficiently or use different logistics strategies to ensure timely delivery, understanding the increased risks of spoilage due to longer distances.

Implications for productivity and quality

1. The necessity for fresh fruit bunches to be processed within 24 hours of harvesting to produce high-quality oil underscores the importance of logistical efficiency. The result suggests that while proximity to processing centers is generally beneficial, improvements in transportation and farm management practices are needed across all distances to minimize evacuation times.
2. The education status of farmers, mentioned as a factor enabling timely operations, points to the role of knowledge and skills in managing logistical challenges. Educated farmers may have better access to information on best practices and more capacity to organize their resources effectively.

Strategies for improvement

Enhancing the logistical chain from farm to processing center is crucial for the sector. This could involve investments in better road infrastructure, increased access to transportation means, and the development of smaller, local processing units to reduce travel distances for farmers situated further away.
Training and education programs focusing on logistical management and the importance of quick evacuation can help farmers of all education levels improve their practices. Additionally, cooperative models or community-based approaches could be employed to pool resources for transportation, making the process more efficient and cost-effective.

CONCLUSIONS

To effectively elevate Special Palm Oil (SPO) production in Nigeria and surmount the sector's prevailing challenges, a holistic strategy is imperative. This strategy must navigate through the complex landscape of oil palm farming, addressing demographic and educational influences, operational dynamics, logistical hurdles, and the pivotal role of agricultural extension services.

- An aging farmer population necessitates initiatives to attract younger individuals to agriculture, ensuring future sector sustainability. Educational levels among farmers play a crucial role in their ability to adopt innovative practices and technologies, underscoring the need for educational programs aimed at enhancing agronomic knowledge.
- The dependence on research stations for superior planting materials highlights the importance of fostering stronger links between researchers and the farming community. Such collaboration is essential for the dissemination of improved seed varieties that promise enhanced yields and crop quality, directly impacting SPO production efficiency.
- Proximity to processing centers and the efficacy of fruit evacuation processes are critical for maintaining oil palm fruit quality. While many farmers in close proximity to processing centers manage timely evacuation, there's a pressing need for infrastructural enhancements and logistical improvements to support farmers across all distances.
- Agricultural extension services are crucial in narrowing the gap between research innovations and their practical application on farms. They play a vital role in providing farmers with the necessary knowledge and skills to boost farm productivity, improve SPO quality, and embrace sustainable practices.

Addressing the oil palm sector's challenges and boosting SPO production necessitates a coordinated approach. Initiatives focused on revitalizing the farmer demographic, expanding educational outreach, enhancing access to quality resources, refining operational and management practices, and improving logistical efficiency are essential. Additionally, reinforcing agricultural extension services will equip farmers with the requisite knowledge for best practice implementation, leading to heightened productivity, sustainability, and sector profitability.

This multifaceted strategy will not only fulfill domestic SPO demand but also reestablish Nigeria's status in the global palm oil marketplace.

DISCLOSURE STATEMENT

In the development and execution of this study, we report no financial conflicts of interest or personal connections that might seem to affect our research outcomes.

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PROCENA SPOSOBNOSTI MALIH PRERAĐIVAČA U SNABDEVANJU PROIZVODIMA OD ULJA KOD PROIZVODNJE SPECIJALNOG PALMINOG ULJA U NIGERIJI

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Apstrakt: Ova studija koristi dizajn poprečnog preseka observacione studije kod ispitivanja faktora koji su bitni malim proizvođačima (farmerima) u obezbeđenju neophodnog kvaliteta i količine svežeg ploda (voća) uljane palme u proizvodnji specijalnog palminog ulja u Nigeriji.
Korišćene su odgovarajuće veličine uzorka i višestepena tehnika uzorkovanja za selekciju ispitanika (faza 1 - zoniranje, faza 2 - identifikacija dostupnih farmera u svakoj državi, i faza 3 - primena Slovin formule za selekciju ispitanika).

Ankete su podeljene na 528 farmera u šest država koje proizvode palmino ulje. Nalazi pokazuju da je farmerima proizvođačima potrebno u proseku tri dana da prenesu sveže grozdove plodova (voća) do postrojenja za preradu, što negativno utiče na raspoloživu količinu proizvodenog specijalnog palminog ulja.
Faktori kao što su pristup informacijama, članstvo u organizacijama i nivo obrazovanja identifikovani su kao ključni za poboljšanje sposobnosti farmera u lancu snabdevanja.
Shodno navedenom, studija preporučuje da ključni akteri unaprede savetodavne usluge koje se pružaju farmerima.

Ključne reči: *Stručno obrazovanje, mali farmeri, proizvodnja voća, količina i kvalitet, specijalno palmino ulje.*

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