Analysis of Farmers' Level of Participation in the Agricultural Transformation Agenda Support Program Phase one (ATASP-1)

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Abstract
Improving smallholder farmers' participation in agricultural programmes remains essential for enhancing productivity, food security, and rural livelihoods in Nigeria. Rice farmers, in particular, continue to face constraints such as limited access to inputs, credit, and extension services, which affect their ability to benefit fully from intervention programmes. In response, the Agricultural Transformation Agenda Support Programme Phase One (ATASP-1) was introduced to strengthen value chains and improve farmers' access to production and market support. This study examined the level of participation of rice farmers in ATASP-1 in Anambra State, Nigeria. Using a sample size of 180 rice farmers, the study employed descriptive statistics to analyse farmers' socio-economic characteristics, participation levels, and the types of support received. The results showed that the farmers were predominantly within their active age group, with a mean age of 46 years, and had considerable farming experience averaging 15 years. Most participants operated on small farm sizes with a mean of 1.02 hectares, reflecting the smallholder nature of rice production in the study area. Awareness of ATASP-1 was high at 85.0%, while 76.7% of farmers participated in training activities. Overall, 63.3% of respondents demonstrated a high level of participation, indicating strong engagement with programme activities. The study further revealed that the most common forms of support provided were fertilizer (78.9%), improved seeds (76.7%), and market linkage (75.6%), while access to credit (36.7%) and storage facilities (28.9%) remained limited. The findings suggest that although ATASP-1 achieved considerable reach and participation, gaps in financial and post-harvest support constrained the full realisation of its benefits. Strengthening these components is essential for improving the effectiveness of future agricultural interventions.

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Introduction

Rice remains one of the most strategic food crops in Nigeria because it is central to household food consumption, rural income, and national food security. Yet the country has continued to struggle with a persistent gap between domestic demand and local supply. This problem is closely tied to the structural constraints facing smallholder farmers, including weak access to improved seed, fertiliser, irrigation, credit, extension support, and organised markets. Evidence from Nigeria's rice value chain shows that yields have remained far below achievable levels for many years, despite the country's favourable agro-ecological conditions. In practical terms, this means that the problem is no longer simply whether rice can be produced in Nigeria, but whether farmers can participate effectively in programmes that provide the inputs, knowledge, and institutional support needed to raise output on

a sustainable basis (Liverpool-Tasie *et al*., 2014) [15]; (Mghenyi, 2021) [16]; (Obianefo *et al*., 2022) [22]; (Onoja *et al*., 2024) [29].

In response to these longstanding constraints, the Federal Government of Nigeria, with support from the African Development Bank, introduced the Agricultural Transformation Agenda Support Program Phase One (ATASP-1) in 2015. The programme was designed to strengthen selected commodity value chains, especially rice, cassava, and sorghum, through a combination of infrastructure development, productivity support, value chain enhancement, and programme management. The logic behind ATASP-1 was clear: if smallholder farmers were linked more effectively to inputs, training, processing facilities, irrigation, and markets, their productivity and income should improve. Earlier work on the broader Agricultural Transformation Agenda also suggests that farmers' access to credit, technical support, and group-based participation shapes how strongly they benefit from such interventions. This makes participation an important analytical issue, because the success of an agricultural programme depends not only on what it offers, but also on how actively farmers engage with its activities and services (African Development Bank Group, 2013) [2]; (Kareem & Akinbile, 2015) [14]; (Alhassan *et al*., 2019) [4].

Empirical studies on ATASP-1 and related rice interventions already show that participation matters. For example, evidence from Niger State indicates that rice producers under ATASP-I participated more actively in local training, fertiliser application, and planting activities than in ploughing and financial linkages, with poor credit access and high equipment cost emerging as major constraints. Other studies found that ATASP-1 contributed to improved extension delivery, reduced poverty among participating rice farmers, and supported technology adoption and better farmer performance in programme areas. In Anambra State specifically, related evidence from rice value chain studies shows that farmers still face serious adoption and productivity constraints, even where agronomic opportunities are strong. Taken together, these findings suggest that simply being listed as a beneficiary is not enough; the level and quality of farmers' participation in actual programme activities may be one of the main channels through which outcomes are produced (Mohammed & Nabara, 2020) [17]; (Alhassan *et al*., 2019) [4]; (Onyekineso & Frank, 2021) [30]; (Yisa *et al*., 2024) [35]; (Obianefo *et al*., 2022) [22].

Although previous studies have examined programme effects on extension delivery, poverty, productivity, and farmer performance, the available evidence located through this search is concentrated largely in Niger, Kebbi, Sokoto, Kano, Southwestern Nigeria, or Southeast Nigeria more broadly, rather than on farmers' level of participation in ATASP-1 rice activities in Anambra State as a distinct focus. That gap is important because Anambra is one of the rice-producing states within the Adani-Omor staple crop processing zone, and local realities can shape how farmers engage with training, input distribution, infrastructure, and market support. A study that analyses farmers' level of participation in ATASP-1, alongside the support actually received, is therefore necessary for two reasons. First, it helps to show whether programme delivery translated into meaningful farmer engagement. Second, it provides evidence on whether participation patterns can explain uneven outcomes across beneficiaries.

On this basis, the present study is justified in seeking to describe the socioeconomic characteristics of farmers in ATASP-1, assess their level of participation, and identify the specific forms of support made available to rice farmers under the programme (African Development Bank Group, 2013) [2]; (Mohammed & Nabara, 2020) [17]; (Onyekineso & Frank, 2021) [30]; (Yisa *et al*., 2024) [35]. It is on this background that the study hopes to:

1. describe the socioeconomic characteristics of farmers in ATASP-1 program,
2. assess the level of participation of rice farmers in ATASP-1, and
3. identify and outline the types of support (e.g; inputs, training, infrastructure) provided by ATASP-1 to rice farmers.

Material and Method

Area of the Study

Anambra state is located in the South-Eastern part of Nigeria, and comprises of 21 Local Government Areas which includes; Aguata, Awka North, Awka South, Anambra East, Anambra West, Anaocha, Ayamelum, Dunukofia, Ekwusigo, Idemili North, Idemili South, Ihiala, Njikoka, Nnewi North, Nnewi South, Ogbaru, Onitsha North, Onitsha South, Orumba North, Orumba South and Oyi". The state is sub-divided into four agricultural zones which consists of; Aguata agricultural zone, Anambra agricultural zone, Awka agricultural zone and Onitsha agricultural zone to aid planning and rural development. Its name is an anglicized version of the original Omambala, "the Igbo name of the Anambra River". The state administrative capital is Awka. "The state is bounded with Delta State to the West, Imo State and Rivers State to the South, Enugu State to the East, and Kogi State to the North". The indigenous ethnic groups in Anambra state comprised of 98% Igbo and 2% Igala mainly living in the North-Western part of the state (NCP, 2006) [19]. Anambra State is situated between Latitudes 5° 32' and 6°45' N and Longitude 6°43' and 7° 22 'E respectively. The state has an estimated land area of 4,865sqkm (Nigerian Investment Promotion Commission, 2024). Anambra State has a tropical climate with average temperatures ranging between 26-27oC, high humidity levels of 65-80% and an annual rainfall between 1,520-2,020mm following a bimodal pattern with a wet season from March to October and a dry season from November to February (NIMET, 2022; World Bank, 2021) [34]. The state features tropical rainforest and savannah vegetation with topography that includes wetlands, lowlands plains, and undulating terrain (Nwaiwu *et al*., 2023) [20]. Major crops grown include cassava, yam, rice, maize and oil palm. While minor crops like potatoes are cultivated in some specific areas (Anambra State ADP, 2021) [5]; (FAO, 2020) [12]. The predominant occupation is smallholder farming, supported by secondary activities such as fishing, trading, livestock rearing and food processing (NBS, 2022). Ayamelum, Ogbaru, Orumba South and Orumba North play a host community to the Agricultural Transformation Agenda Support Programme due to their comparative advantage in the rice and cassava production.

Population of Study

Rice farmers participating in ATASP-1 Anambra State according to the information supplied by the Programme Zonal Monitoring and Evaluation Officer, includes 1465 males and 1688 females in the 3 benefiting Local Government Area (Ayamelum, Ogbaru, Orumba-North) making it a total of 3153 rice farmers. Orumba-South focused solely on cassava processing.

Table 1: Distribution of Anambra State ATASP-1 Rice Farmers

Sn	Local Government Area	Male	Female	Total
1	Ayamelum	1212	1372	2584
2	Ogbaru	92	92	184
3	Orumba North	161	224	385
Total		1465	1688	3153

Source: Agricultural Transformation Agenda Support Program Anambra State (ATASP-1), April 2024

Sample Size and Sampling Technique

Multi-stage sampling technique will be employed for the selection of the study representatives. The first stage involves purposive selection of Ayamelum, Ogbaru and Orumba-North as the three LGA'S under ATASP-1. Ayamelum is made up of eight communities, with 6 working under ATASP-1 namely: Omor, Omasi, Anaku, Umumbo, Ifite Ogwari, and Umuerum. Ogbaru is made up of 16 communities, with 5 working under ATASP-1 namely: Atani, Odekpe, Ossomalla, Amiyi, and Ogbakugba. Orumba North is made up of 16 communities, with 5 working under ATASP-1 namely: Awa, Ufuma, Awgbu, Ndiowu, and Omogho. Second stage involves the purposive selection of two communities each from Ayamelum LGA (Omor and Ifite Ogwari) and Ogbaru LGA (Atani and Odekpe) and one community from Orumba North LGA (Omogho). This is because in Orumba North, Omogho is the only rice producing community working under ATASP-1. Thus, making a total of five communities from the 3 LGA's working under ATASP-1. The third stage involves random selection of 36 rice farmers (respondents) from each of the 5 communities to ensure an unbiased sample. This gives a total of 180 respondents from the three LGA's which will form the sample size.

Data Analysis

Data was analyzed using descriptive statistics such as mean, percentages, and frequency

Results and Discussion

Description of Farmers Demographic Information

Table 1 reflects a useful profile of the rice farmers participating in ATASP-1 in Anambra State. This matters because demographic and farm characteristics often shape how farmers respond to an intervention programme, the kinds of constraints they face, and the level of productivity gains that can realistically be achieved.

Sex. The results showed that 55.0% of the participating rice farmers were male, while 45.0% were female. This pattern suggests that rice production under ATASP-1 is still somewhat male-dominated, though female participation is substantial. In practical terms, this near-parity is important for programme design and outcome interpretation. A programme that reaches 45.0% women is not operating in a purely male farming space; it is engaging a large female farming workforce whose productivity outcomes may be influenced by different constraints, particularly around land access, labour, finance, and time burdens. This finding aligned with the ATASP-1 M&E Report (2021), which reported that about 42% of beneficiaries were women, suggesting that women's inclusion under ATASP-1 is meaningful but still below full parity. It also differs from evidence reported by Omolehin *et al*. (2019) [28], where participation in ATASP-1 implementation zones was heavily male-dominated (92% male and 8% female), indicating that the Anambra sample reflects a more gender-balanced participation pattern than reported in some other contexts. Relatedly, Ibrahim and Yakubu (2020) [13] observed that although women participated in trainings in some northern states, many lacked land or inputs to fully apply what they learned, reinforcing the concern that women's outcomes may be shaped by structural constraints even when their participation rates are relatively high.

Age. The age distribution indicates a largely active farming population. Farmers aged 35–48 years formed the largest group at 45.6%, followed by 49–61 years at 36.7%. Younger farmers aged 21–34 years were 11.1%, while older farmers aged 62–74 years accounted for 6.7%. The mean age was approximately 46 years, which aligned with the dominant categories and reinforced that participants are mostly in their economically active years. This result is consistent with Omolehin *et al*. (2019) [28], who reported that farmers participating in ATASP-1 were largely within active ages, with an average age of about 42 years. It also aligned with Ben-Chendo *et al*. (2017), who found a mean age of 49 years among rice farmers in Kaduna State, similarly interpreting the age structure as reflective of an active farming population. In the same vein, AShelleng and Tabitha (2021) [32] reported that beneficiaries were concentrated within productive age groups, supporting the wider evidence that rice farming interventions tend to engage farmers who are physically and economically capable of sustaining farm operations.

Marital status. Married farmers constituted 54.4% of respondents, widowed farmers were 26.7%, single farmers were 10.6%, and separated or divorced farmers were 8.3%. This structure suggests that most farmers carry household responsibilities that may influence production decisions. The high proportion of widowed participants (26.7%) is striking and may indicate that many farms are being managed under household vulnerability conditions, particularly where widowhood reduces access to land, labour, or capital. In impact terms, this can affect programme outcomes in two ways: it may dampen productivity gains if vulnerable households cannot fully utilize inputs, and it may also mean the programme is reaching groups that could benefit strongly from support if barriers are reduced. The high share of married farmers is in line with Ben-Chendo *et al*. (2017), who reported that 88.0% of rice farmers were married, and

AShelleng and Tabitha (2021) [32], who also found a predominance of married respondents among rice farmers. Although the specific share of widowed farmers is not emphasised in many of the cited studies, Yisa *et al*. (2024) [35] identified marital status as one of the factors influencing participation, suggesting that household structure is not only descriptive but can shape programme engagement and outcomes.

Level of education. Nearly half of the farmers had secondary education (49.4%), 25.0% had tertiary education, 16.1% had primary education, and 9.4% had no formal education. This is a relatively strong educational profile for a smallholder farming sample. For ATASP-1, this distribution is relevant because education tends to improve the ability to interpret extension messages, keep basic records, and adopt improved agronomic practices correctly. With 74.4% having at least secondary education (49.4% secondary plus 25.0% tertiary), the programme's training components and technical packages are more likely to be understood and implemented as intended, which supports the plausibility of improved production outcomes. The 9.4% with no formal education also signals the need for practical, demonstration-based extension approaches so that benefits are not concentrated among more educated participants. This finding supports Omolehin *et al*. (2019) [28], who reported that about 62% of ATASP-1 participants had secondary or tertiary education, implying that participation in rice technology programmes often involves farmers with at least basic formal education. It also aligned with Okeke and Chukwu (2021) [25], as discussed in the literature, who reported that education was positively associated with active participation in ATASP-1 in Anambra State, particularly in training attendance and adoption of new practices. Conversely, Ben-Chendo *et al*. (2017) found lower educational attainment in their context (with many farmers having only primary education), suggesting that educational profiles can vary considerably by location, which may influence how training components are received and applied.

Farming experience. Most respondents were experienced farmers. Those with 12–16 years of farming experience represented 48.3%, 17–21 years were 31.7%, 6–11 years were 14.4%, and 22–26 years were 5.6%. The mean farming experience was approximately 15 years. This indicates that ATASP-1 participants are not novices; they are farmers with substantial years in agriculture who may be better positioned to compare pre-programme and programme performance and to integrate new practices into established routines. This pattern is consistent with the broader literature that links experience to adoption and programme participation, as Omolehin *et al*. (2019) [28] emphasised that technology adoption among participants depended on socio-economic characteristics such as age and education, which often move alongside accumulated farming experience. It also aligned with findings reported in the VCDP literature, where farm experience significantly influenced net farm income among rice farmers (Olugbenga *et al*., 2023) [27], suggesting that experienced farmers may be better able to convert support packages into measurable performance gains.

Household size. Household size was mostly moderate to large: 58.9% had 6–9 persons, 23.9% had 2–5 persons, and 17.2% had 10–13 persons. The mean household size was approximately 7. This has direct implications for rice production because household labour often contributes to land preparation, weeding, bird scaring, harvesting, and post-harvest handling. A mean of 7 suggests a potentially strong labour base, which can support production scale-up if other constraints such as finance and land are addressed. This finding is broadly consistent with Ben-Chendo *et al*. (2017), who reported a much larger mean household size of 10 persons, and interpreted it as an indication of household labour availability. It also links with Yisa *et al*. (2024) [35], who identified household size as a significant factor influencing participation and welfare outcomes among rice farmers, implying that household composition can affect both engagement in programmes and the ability to convert programme support into production gains.

Main occupation. Rice farming was the main occupation for 35.6% of respondents, followed by other crop farming at 21.1%, artisans at 18.9%, others at 13.3%, and trading at 11.1%. This indicates that while rice farming is the largest single category, a majority (64.4%) are engaged primarily in other occupations. This livelihood diversification is important when assessing programme impact because it affects time allocation and investment intensity. Farmers who are primarily rice farmers (35.6%) may respond more strongly to rice-focused interventions because rice is central to their income. This pattern is consistent with the broader insight from Iwuchukwu *et al*. (2017) that rice production among smallholders is shaped by constraints around labour, capital, and mechanisation, which can encourage diversification as households balance farming with other income sources. It also aligned with the literature's emphasis that participation intensity may vary between "active" and "passive" participants (Okeke and Chukwu, 2021) [25], where diversified livelihoods may reduce sustained engagement in trainings and other programme activities.

Access to credit. Access to credit was evenly split, with 50.0% reporting access and 50.0% reporting no access. This result signals a major structural constraint within the participant population. Even when a programme provides training and possibly some inputs, credit access often determines whether farmers can expand acreage, hire labour at peak periods, pay for irrigation or mechanisation services, and purchase fertilizer or agrochemicals on time. With half of the farmers lacking credit, it is reasonable to expect uneven programme impacts: farmers with credit may be able to complement programme support and achieve stronger production gains, while those without credit may adopt partially or late, reducing yield and output improvements. This finding aligned with Iwuchukwu *et al*. (2017), who observed that rice farmers often rely heavily on personal savings and informal sources, with limited bank financing due to collateral issues and high interest rates. It also supports Yisa *et al*. (2024) [35], who found that credit received significantly influenced participation in ATASP-1 and welfare outcomes, implying that credit access is not only a production constraint but also a participation driver. Related evidence from VCDP studies similarly highlights the importance of low-interest finance for improving rice farmers' income (Olugbenga *et al*., 2023) [27], reinforcing the relevance of credit constraints in interpreting programme outcomes.

Farm size. Farm sizes were predominantly small. Farmers cultivating 0.2–1.39 ha represented 91.7%, those with 1.4–2.59 ha were 5.6%, 2.6–3.79 ha were 1.7%, and 3.8–4.99 ha were 1.1%. The mean farm size was 1.02 ha. This confirmed that the ATASP-1 rice farmers in this sample are largely

smallholders. This is crucial for interpreting the programme's impact on rice production because production increases may come more from yield improvement rather than expansion of cultivated area. With 91.7% operating below 1.4 ha, the ceiling for output growth through area expansion is limited for most participants unless the programme addresses land constraints or enables land rental. Therefore, the programme's effectiveness should be judged largely on its ability to raise productivity per hectare, improve efficiency, and reduce post-harvest losses, rather than expecting dramatic jumps in total output driven by large-scale acreage. This result supports Iwuchukwu *et al.* (2017), who emphasised that peasant farmers commonly cultivate less than two hectares, limiting the economic case for mechanisation on very small plots and reinforcing the structural smallholder nature of rice farming. It also aligned with the Chapter 1 problem framing that Nigerian rice production is dominated by small-scale out-growers relying on traditional technology, and it complements the literature's argument that improved inputs and practices are critical for yield gains where land expansion is constrained.

Table 2: Description of Farmers Demographic Information

Variables	Frequency	Percentage (%)	Mean
Sex:			
Female	81	45	
Male	99	55	
Age:			
21 - 34	20	11.1	
35 - 48	82	45.6	
49 - 61	66	36.7	46.48
62 - 74	12	6.7	
Marital status:			
Married	98	54.4	
Separated/Divorced	15	8.3	
Single	19	10.6	
Widowed	48	26.7	
Level of education:			
No formal education	17	9.4	
Primary	29	16.1	
Secondary	89	49.4	
Tertiary	45	25	
Farming experience:			
6 - 11 years	26	14.4	
12 - 16 years	87	48.3	15.36
17 - 21 years	57	31.7	
22 - 26 years	10	5.6	
Household size:			
2 - 5 people	43	23.9	
6 - 9 people	106	58.9	7.2
10 - 13 people	31	17.2	
Main occupation:			
Artisan	34	18.9	
Other crop farming	38	21.1	
Others	24	13.3	
Rice farming	64	35.6	
Trading	20	11.1	
Access to credit:			
No	90	50	
Yes	90	50	
Farm size:			
0.2 - 1.39 ha	165	91.7	
1.4 - 2. 59 ha	10	5.6	1.02
2.6 - 3.79 ha	3	1.7	
3.8 - 4. 99 ha	2	1.1	

Source: Field Survey, 2025

Level of Participation of Rice Farmers in ATASP-1

Table 2 showed the degree to which participants were actually exposed to ATASP-1 activities.

Awareness of the programme. The findings indicate that 85.0% of respondents were aware of ATASP-1, while 15.0% were not. This is a strong awareness level and suggests that ATASP-1 achieved broad visibility among rice farmers in the study area. For an agricultural support programme, high awareness is the first threshold for participation and adoption; farmers cannot benefit from training, inputs, or market linkages if they do not know the programme exists. That said, the presence of a non-trivial unaware group (15.0%) implied that information dissemination was not fully inclusive, and this may reflect gaps linked to location, social networks, extension coverage, or farmer organization membership. This result is consistent with Umeh, Ezeh and Okoye (2022) [33],

who reported over 90% awareness and participation in rice value chain activities in Anambra State, particularly around the Adani-Omor axis. However, it contrasts with Okeke and Chukwu (2021) [25], who found that in some LGAs in Anambra, less than 60% of farmers were fully aware of the programme's offerings, suggesting that awareness levels can vary considerably across locations depending on extension reach and cooperative strength.

Training participation as a core entry point. Participation in ATASP-1 training was relatively high, with 76.7% reporting that they had participated in the programme's training activities, compared with 23.3% who had not. This is important because training is often the main mechanism through which farmers learn improved agronomic practices, input use, pest management, and post-harvest handling that can translate into yield and output improvements. The fact that nearly one quarter (23.3%) did not participate in training suggests uneven exposure to the programme's knowledge component. This finding aligned with the ATASP-1 M&E Report (2021), which reported that about 135,000 farmers were trained nationwide, representing moderate rather than universal coverage. It also supports Okeke and Chukwu (2021) [25], who noted that not all registered beneficiaries attended trainings due to distance, time constraints, or limited awareness of training schedules. In contrast, Ogunleye and Adeyemo (2023) [24] reported higher training adoption rates in some zones, indicating that training intensity under ATASP-1 has not been uniform across states.

Intensity of engagement. The distribution of participation levels showed that 63.3% of respondents had a high level of participation, 27.8% had moderate participation, and only 8.9% had low participation. This pattern indicates that engagement among participating farmers was not superficial for most respondents; rather, the programme appears to have built sustained involvement for a majority. This matters for interpreting impact because higher participation typically increases the probability of receiving multiple support components and applying them correctly and consistently. This result closely mirrors Okeke and Chukwu (2021) [25], who found that about 63% of rice farmers in Anambra State fell into the "active participation" category, lending strong empirical support to the validity of the participation pattern observed in this study.

Moreso, the activity breakdown provides clearer insight into how farmers engaged with ATASP-1. Market linkage events (61.1%) had the highest participation, closely followed by distribution of farm inputs (58.9%) and training or workshops (50.6%). These three are particularly significant because they correspond to major constraints in smallholder rice production, namely access to reliable markets, access to quality inputs, and access to knowledge. This pattern strongly agrees with Eze, Onuoha and Chinedu (2022) [9], who reported that participation under ATASP-1 was strongest in upstream activities such as seed distribution and fertilizer use, with relatively high engagement in market linkage initiatives. It also aligned with Adesina *et al.* (2023) [1], who noted that improved access to markets and subsidized inputs motivated farmers to invest more effort in production due to better price certainty.

Demonstration plots (34.4%) and construction or use of infrastructure (32.8%) recorded moderate participation. Demonstration plots often function as practical learning sites that support adoption through peer observation and evidence of results. With only about one third involved (34.4%), the programme's demonstration pathway may not have reached most farmers, which can slow diffusion of best practices beyond direct trainees. Infrastructure exposure at 32.8% suggests that fewer farmers benefitted from more capital-intensive support, such as irrigation-related improvements, storage, processing facilities, or access roads, depending on what the programme provided locally. This finding is consistent with Ibrahim and Yakubu (2020) [13], who observed that infrastructural components under ATASP-1 had lower reach, particularly in remote communities, due to high costs and implementation delays. It also supports the ATASP-1 M&E Report (2021), which noted that infrastructure benefits were concentrated in specific clusters rather than evenly distributed.

The "others" category was reported by 42.8%, which signals that farmers experienced additional programme-related engagements beyond the listed items. Substantively, this suggests programme heterogeneity across locations, meaning farmers may have been exposed to different bundles of support. This observation supports Okonkwo *et al.* (2022) [26], who documented that ATASP-1 interventions varied across clusters depending on local priorities, infrastructure availability, and partner involvement, leading to differences in farmers' experience of the programme.

Timing of participation. Participation occurred across different programme periods: 25.5% participated between 2016–2018, 22.1% between 2019–2021, and 28.8% from 2022 onwards, while 23.3% reported not participating in training. This spread is analytically useful because timing can influence impact through two main mechanisms. First, earlier participants (2016–2018) may have had more time to internalize practices, adjust farm management, and accumulate benefits over multiple seasons. Second, later participation (2022+) at 28.8% may reflect renewed programme activity or expanded coverage, but with less time for cumulative impact. This pattern is consistent with the phased implementation structure reported in the ATASP-1 Progress and M&E Reports (2019–2021), which showed staggered roll-out across zones and years.

Taken together, Table 4.1 suggests that ATASP-1 had strong reach in terms of awareness (85.0%) and training uptake (76.7%), with most farmers indicating high participation intensity (63.3%). Participation was concentrated in activities with direct pathways to improved rice production, particularly market linkage, input distribution, and training. These findings largely agree with earlier studies on ATASP-1 participation in Anambra State and other intervention zones, while the observed gaps in training, infrastructure, and awareness among a minority of farmers reflect the implementation challenges highlighted in the literature.

Table 3: Level of Participation of Rice Farmers in ATASP-1

Variables	Frequency	Percentage (%)
Awareness of ATASP-1 Program:		
No	27	15
Yes	153	85
Ever participated in ATASP-1 training program:		
No	42	23.3
Yes	138	76.7
Level of participation:		
High	114	63.3
Low	16	8.9
Moderate	50	27.8
Activities of participation:		
Training/ Workshops	91	50.6
Demonstration Plots	62	34.4
Distribution of farm inputs	106	58.9
Construction/ use of infrastructure	59	32.8
Market linkage events	110	61.1
Others	77	42.8
Year of participation:		
2016 - 2018	46	25.5
2019 - 2021	40	22.1
2022 +	52	28.8
Not participated in training	42	23.3

Source: Field Survey, 2025

Types of Support Provided by ATASP-1 to Rice Farmers

Table 3 highlighted the specific support packages received by rice farmers under ATASP-1, as well as farmers' perceptions of their adequacy, providing a practical view of how the programme sought to enhance rice production.

Input-related support. Fertilizer (78.9%), improved rice seeds (76.7%), agrochemicals (66.1%), and market linkage (75.6%) were the most widely reported supports. This shows that ATASP-1 targeted the core productivity constraints in rice farming: seed quality, soil fertility, and pest/weed management, while also addressing market access. High coverage of fertilizer and improved seeds is particularly important as these directly affect yield potential. This finding aligns with Obiora *et al*. (2021) [28] and Umeh *et al*. (2022) [33], who reported that access to certified seeds and subsidized fertilizer under ATASP-1 significantly boosted yields. Similarly, Adesina *et al*. (2023) [1] noted that the combination of improved seeds and fertilizer was the main driver of productivity gains, while agrochemical access supported pest control and reduced losses (Ogunleye & Adeyemo, 2023 [24]).

Market support as an incentive for scale and efficiency. Market linkage reported by 75.6% of respondents indicates that ATASP-1 addressed downstream constraints. Market access can enhance price certainty, reduce post-harvest losses, and encourage investment in improved practices. This is consistent with Eze *et al*. (2023) [9] and Okeke & Chukwu (2021) [25], who found that organized market access under ATASP-1 led to higher production effort and income, reinforcing the positive role of market interventions.

Water, infrastructure, and resilience support. Access to irrigation (57.2%) and feeder road construction (50.6%) were moderately reported. Irrigation improves production stability and enables dry-season cropping, while feeder roads enhance market access and reduce transport costs. These results align with Adesina *et al*. (2023) [1], AfDB (2022) [6], and ATASP-1 M&E Report (2021), which documented positive productivity and market effects. However, coverage was limited, reflecting Ibrahim & Yakubu's (2020) [13] observation that infrastructure support was unevenly distributed.

Capacity building and financial support. Only 42.8% participated in trainings, and 36.7% had access to credit. Compared with input and market support, knowledge and finance components reached fewer farmers. This is consistent with Okeke & Chukwu (2021) [25] and Umeh *et al*. (2022) [33], who noted that distance, timing, and weak extension constrained training participation, and limited credit access reduced farmers' ability to scale production.

Post-harvest support. Access to storage facilities was the least reported support at 28.9%. Limited storage can increase post-harvest losses and force early sales at lower prices, reducing income gains. This confirms Okonkwo *et al*. (2022) [26], who observed that post-harvest infrastructure had lower coverage compared with production-focused interventions.

Adequacy of support. Farmers' perceptions showed that 12.2% rated support as very adequate, 50.6% as adequate, 27.8% as inadequate, and 9.4% as very inadequate. Overall, 62.8% had a positive assessment, suggesting most farmers considered the support sufficient. However, 37.2% perceiving support as inadequate underscores concerns about late delivery, insufficient quantities, and limited coverage of credit and post-harvest facilities (Adesina *et al*., 2023 [1]; Ibrahim & Yakubu, 2020 [13]). This mixed evaluation helps explain variation in programme impacts across farmers, even within the same intervention framework.

In summary, Table 4.2 shows that ATASP-1 effectively addressed core production constraints through inputs and market support, while gaps remained in credit, training, post-harvest infrastructure, and broader resource coverage, shaping the differential outcomes observed among beneficiaries.

Table 4: Types of Support Provided by ATASP-1 to Rice Farmers

A	Support Provided	Frequency	Percentage (%)
1	Improved rice seeds	138	76.7
2	Fertilizer	142	78.9
3	Agrochemical	119	66.1
4	Trainings	77	42.8
5	Access to irrigation	103	57.2
6	Access to storage facilities	52	28.9
7	Access to credit	66	36.7
8	Feeder road construction	91	50.6
9	Market linkage	136	75.6
B	Adequacy of support:		
	Very adequate	22	12.2
	Adequate	91	50.6
	Inadequate	50	27.8
	Very inadequate	17	9.4

Source: Field Survey, 2025

Conclusion

The findings of this study provide a clear and grounded understanding of how farmers engaged with ATASP-1 and how that engagement shaped outcomes. The demographic profile shows that participants were largely experienced, economically active smallholder farmers, operating within typical constraints such as small farm sizes and limited access to credit. Despite these structural limitations, the level of awareness and participation was generally high, with most farmers actively involved in key programme activities such as training, input distribution, and market linkage. This suggests that ATASP-1 was not merely a policy on paper, but a programme that reached farmers in practical ways. However, participation was not uniform across all components. While many farmers benefitted from inputs and market access, fewer had access to infrastructure, credit, and post-harvest support, which limited the overall effectiveness of the intervention for some participants.

The study also shows that participation is not just about being listed as a beneficiary, but about the depth and quality of engagement with programme activities. Farmers who participated more actively were more likely to benefit from multiple forms of support, which in turn improved their production capacity and potential income. At the same time, gaps in training coverage, uneven infrastructure distribution, and limited access to finance highlight that the programme's benefits were not evenly shared.

This unevenness is important because it explains why some farmers experienced stronger gains than others. Overall, the results confirm that ATASP-1 made a meaningful contribution to strengthening rice production systems, but also reveal areas where programme design and delivery can be improved for greater impact.

The study therefore recommend that priority should be given to expanding access to credit and strengthening extension services, as these were key limitations affecting participation and outcomes. In addition, greater investment in irrigation, rural infrastructure, and post-harvest facilities is necessary to sustain production gains and reduce losses after harvest.

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