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## Review Article

## Training of Farmers in Lower Anambra Irrigation Project (LAIP) on the Use of Modern Farm Facilities and Rice Production in Ayamelum LGA

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### Abstract:

One of the mandates of LAIP, sited in Ayamelum LGA of Anambra state is training of the farmers on how to use modern farm facilities for production of rice. Therefore, the paper examined the nexus between training of the farmers in Ayamelum on the use of modern farm facilities and production of rice in the community under investigation. The study however, is guided by the research question: has training of the farmers on the use of modern farm facilities impacted on production of rice in Ayamelum LGA in Anambra state? The paper utilized primary data which were gathered through questionnaire and interview. The collected data were correspondingly analyzed through the usage of charts, tables as well as Content Analysis. The study adopted modernization theory as a theoretical model, which maintained among others that the cause of underdevelopment in the third world countries was their inability to embrace the new ideas by following the developmental steps of the western world. The study found that the training of the farmers did not impact on rice production in Ayamelum LGA because it was not consistently carried out by the government and on the other hand, the farmer's participation was not encouraging. Hence, we suggested that the government should consistently bring in innovations to the farmers through training and retraining of the farmers on the technological knowhow. Secondly, the farmers should participate fully in the training exercise so as to improve production of rice in Ayamelum Local Government Area in Anambra state.

**Keywords:** *Development, Farm Facilities, Modernization, Training of Farmers, Rice Production*

### 1. Introduction:

From ages, the constancy of change has never been disproved by both philosophers and scholars alike. This change ranges from physical growth, through intellectual expansion to knowledge acquisition. The physical growth changes from body development through maturity to decline as a result of ageing. Intellectual expansion on the other hands continues indefinitely till the state of dementia, which may be caused by old age. This is the reason Onuigbo (2005) maintained that 'he who is tired of learning is tired of living'. Knowledge acquisition is largely achieved through training. Training cum practice, they say makes perfect. Hence, prior to federal government's intervention in production of rice in Ayamelum LGA, under the aegis of LAIP, farmers were utilizing the crude methods and facilities such as manual labour with hoes, machetes etc in agricultural productivity. The methods revolved around usage of local facilities, which hindered and stunted the growth of rice production during the pre-interventionist era. With the government intervention, modern farm facilities, such as herbicides, insecticides, fertilizer, ploughs, mowers, combine harvester and milling as well as de-stoning machines were provided to the farmers for the purpose of boosting rice productivity in the area (Okonkwo, 2023). In spite of the above provisions through the government's intervention measures, rice production in Ayamelum is still herculean and inadequate. In order to boost rice production, extant authorities suggested different strategie.

## Article History

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According to Nwa and Matins (1982) construction of irrigation project to cushion the effect epileptic water supply will enhance rice production. In corroboration to the above, Fatokun and Ogunlana (1992) empirically proposed that if about 25 percent of the observed  $2 \times 10^6$  hectares of irrigable areas were subjected to irrigation and cultivated two time with rice and maize;  $5 \times 10^6$  tons of rice and  $2 \times 10^6$  tons of maize would be annually produced to ensure production of surplus food in Nigeria. For Mustapher *et al* (2012), to record progress in the production of rice, the farmers need to improve their farming techniques. However, the lacunae in literature remains that the extant authority did not interrogate the improvement in rice production in Ayamelum through training of farmers on the use of modern farm facilities hence, this study. Essentially, training of the farmers on the proper use of the farm facilities for optimal application is the focus of the study. This is more reason it is among the mandate of the government under the aegis of (LAIP) for sustainable rice production in Ayamelum LGA. However, this paper is fashioned to unraveling the relationship within the training of farmers on how to use the modern farm facilities and production of rice in Ayamelum LGA in Anambra State. For brevity sake, it is discussed under the following captions: farm facilities demystified, rice production processes, methodology, training of farmers and rice production in Ayamelum, data presentation and analysis, summary and prognoses.

### 1. Farm facilities demystified

Those things that are needed for production of food are described as farm facilities. By way of definition, we can emphatically aver that, farm facilities imply those materials things that are needed during agricultural activities that enhanced land cultivation, crop maintenance and processing of same for food production. They are called farm facilities because they facilitate the production of food for human and animal consumptions. These farm facilities include among others the following: accessible road, arable land, durable water supply (irrigated or rainfall), lawn mower, plough, threshing machine, hybrid seed, herbicides, insecticides, fertilizers milling and de-stoning machines. Those facilities that enhance crop yield can be further subdivided into two such as inputs and implements. The inputs are those materials that a farmer applies on the farm land for proper crop yield. One of the fundamental characteristics of these is that they are the necessary part of the crop which cannot be retrieved after usage and/or application. The inputs involve the following: water, hybrid seeds, herbicides, insecticides and fertilizers. The farm implements on the other hand are those materials that are used on the farm land. They are not the corporate part of the crop yield rather they can be seen as the enhancers which are retrievable after usage. This farm implements include: accessible road, arable land, lawn mower, plough, threshing machine, milling and de-stoning machines.

### 1. Rice production processes

Rice production is a systemized venture, which is devoid of haphazard arrangements. Hence, it stems from the following order of importance: choice of land, choice of seed, land preparation, planting, fertilization, water management, weed control, insect control, bird control, rodent control, harvesting, threshing, parboiling, milling, de-stoning and storage (Okonkwo, 2023). For the sake of clarity however, the processes are painstakingly discussed below:

#### Choice of Land

The first move an ardent rice farmer makes is to make choice of land. In making choice of land for rice production, some considerations are needed, which include water retentive capacity of the land and the soil type. Preferably, loamy soil and waterlogged areas serve as the ideal in this context. Having actualized the choice of land, the next stage in the process is the choice of seed to be cultivated.

#### Choice of Seed

Seed is very important in agriculture generally because it is the types of seed one sows that one reaps. This is more reason the choice of seed is paramount in the rice production processes. Seeds have their different characteristics and yielding capacity in relation to the climatic condition of the environment. This choice of seed is systematically followed by land preparation.

#### Land Preparation

One of the most tedious aspects of rice production process is land preparation. This is so because during the period of utilization of manual labour, it involved two stages such as slashing the grasses with machete and tilling the land with hoes. With the mechanization of agriculture and the concomitant intervention of the government, machines are used for the land preparation. In doing this, herbicides are spread on the grasses after which machines are used for mowing and ploughing the land for rice cultivation. This is also followed in corresponding order by planting.

#### Planting

Rice planting has three methods, such as direct planting, transplanting and broadcasting. In direct planting, the farmer will be putting the seeds in the soil directly, while in that of transplanting methods, the farmer will prepare nursery where the seed will be spread for germination after which it will be transplanted in the main rice field. On the area of broadcasting, the farmer will spread the seeds on the land directly for the seeds to germinate and grow. With the government intervention, the farmers were taught on how and reasons for adopting any of the method but specifically advised to adopt broadcasting method which is less expensive and reduces drudgery in rice production process.

### **Fertilization**

Sequel to incessant cultivation of limited parcels of land engendered by population surge in the society, application of fertilizers became imperative. At this stage, the prospective farmer applies fertilizers based on the growth rate and maturity of the rice. The most essential fertilizers for rice production are NPK and Urea. These are expected to be applied considering the timing and the needed proportion. Worthy to note about fertilization of rice is that wrong application affects rice yield adversely. This is followed by water management.

### **Water Management**

The importance of water in rice production can never be over emphasized, that is more reason the government constructed irrigation to enhance availability of water for adequate rice yield. After the fertilizer application, water is applied in the farmland. The water among others serves as catalyst that helps the fertilizer to release the expected nutrients for proper rice yield. Also, the water management helps to control weeds, because weeds cannot germinate in water. The next in order of actions in rice production processes is weed control and weeding.

### **Weed Control**

Weed control or weeding involves all the activities engaged by the farmers to ensure that weeds do not germinate, grow and disturb rice. One of the mechanisms is application of water in the farm land to cover the land surface. Since seeds cannot germinate and grow in the water, this serves the purpose. If eventually the water fails to cover the land because of the topography and landscape, manual weeding is embarked on. Here, the farmers will pick the weeds from the rice, so as to allow the rice yield very well. After weed control, insect control follows.

### **Insect Control**

One of the problems faced by rice farmers is insects; as a result, it needs to be controlled through application of insecticides. During weeding, informed farmers may notice insect infestation on the farmland, which they tackled by application of insecticides. When the insect is controlled, the next in line of activities is bird control.

### **Bird Control**

During the flowering of rice, birds always feed on the flower. Considering the level of havoc birds wrecks on the rice, it needs to be controlled through different way. One of the ways is creating scarecrows or by using nets to cover the areas and possibly hiring human beings to scare the birds from ingesting the rice flowers. Bird control is also followed by rodent control.

### **Rodent Control**

After flowering of rice, it turns to seeds. At this stage, rodents such as rats, rabbits, grass cutters etc., attack the seeds even the

stems on the part of grass cutters. The rodents are controlled through usage of wire gauze or traps to scare, catch or kill the rodents. After this stage, we migrate to harvesting.

### **Harvesting**

In the traditional setting, harvesting is grouped into two stages such as cutting and the proper threshing. Cutting with machetes or sickle and threshing with sticks or machines. With the technology advancement, it can be done with combine harvester that can cut and thresh simultaneously, and at the same time winnows to remove chaffs from the fine grains. Following this, is milling stage.

### **Milling**

At the pre-mechanization era, milling was preceded by parboiling and drying of the paddy rice which took some days before subjecting it to mortar and later to the milling machines. With the invention and installation of Giant Mill which has the capacity to parboil, dry, mill and de-stone in Ayamelum, milling can take a single activity and process. But in absence of the Giant Mill, de-stoning can take place after milling from the smaller machines after which the de-stoned rice will be bagged and stored in a safe place. For perfection of the stages in the process of rice production, training of the farmers is needed.

## **2. Methodology**

The study is structurally underpinned by modernization theory as the theoretical nexus. The theory views development from the trajectory of civilization of the western world. The main proponents of the theory involved Almond and Powell (1966), Almond and Coleman (2016) and Pye (1971), as well as other economists and sociologists like Smith (1776), Rostow (1990), Maine (2019), Toennies (1887), etc, with the basic proposition among others that development implies modernization and industrialization, which characterized the industrialized western capitalist countries. Development, according to Almond and Powell (1966), is the evolution of a political system through several stages, ranging from a traditional stage to modernity which is characterized by cultural secularization, structural differentiation and equality. More so, a society is said to be developed when it has development syndrome such as capacity, role differentiations and equality. With the above characteristics, the society can manage varied crises, which involves legitimacy, distribution participation, identity, and integration (Pye, 1971). Furthermore, it is a transition from a society known for status to the one known for contract (Maine, 2019). In another development, it stems from Gemeinschaft to Gesellschaft, where the former implies a traditional society that is status bound, where life styles are defined by birth and there are no tendency to act based to market dictates or chances for individualistic tendencies. The latter on the other hand is analogous to contract society, which creates room for individualism, where market

norms guide the socio-political actions of the people (Toennies, 1887). Clarifying further, two types of societies were identified such as (1) Traditional society and (2) modern society. By a way of explication, the traditional society is characterized by traditional authority where power and legitimacy rest on the belief system and the sanctity of the local values and norms. The modern society on the other hand is known for legal, rational, and bureaucratic authority where legitimacy lies on acceptance of the rules made by men and those who implement such rules and orders. In furtherance of the above template, the traditional society is characterized by the following: Affectivity, Ascription Collective-Oriented, Diffuseness, and Particularism, whereas the modern society is known for achievement, neutrality, objectivity, self-orientation, specificity, and universalism.

According to the scholars above, the nations of the west are modern, which the reason for their development is; whereas the countries of the Third World are traditional, which necessitated their underdevelopment. However, the possible ways that will guarantee development in the Third World nations according to them is by shoving off their traditional ways by emulating western norms and values. Moreover, Smith (1776) attributed development to the increase in the wealth of nations, which according to him was made possible by the increase in capitalist principles and production. In the same vein, Rostow (1990) sees development as economic growth, which could be reached by crossing five stages known as “Stages of Economic Growth” such as traditional society; 2) the stage of pre-takeoff to development; 3) the take-off stage; 4) the stage of maturity; and 5) the stage of mass consumption. By a way of application of modernization theory to the study, the manual method of rice production appears to be responsible for stunted growth in rice production in Ayamelum LGA. Therefore, for improvements to be made in the rice production process in the area, the farmers should adapt to application of new farm facilities. Essentially, the knowledge on when and how to apply the facilities are paramount; hence, the training and retraining of the farmers for rice production in Ayamelum LGA. By extension, the more farm facilities are provided to the farmers, the more the government, through LAIP train the farmers on the use of same, the better application of the farm facilities, the more rice is produced in Ayamelum LGA of Anambra state. The paper utilized ex-post facto design, which is used to examine the effects of occurrences instead of creating it (Leege & Francis 1974). Ex-post facto design investigates the possible relationships between variables through observation of existing condition and searching for the factors that contributed to it. It seeks establishment of causal effect and relationships between variable, events and circumstances. More so, it finds out the effects of some occurrences (Kerlinger, 1986). The research design has the before and after measurement signs assymbolized thus:

$$O_a O_b O_c O_d \quad X \quad O_e O_f O_g O_h$$

It has many before and after measurements, where the differences from  $O_a$  to  $O_e$  is the fundamental emphasis of the experimental measurement, which centres on the independent variable X and dependent variable Y which also stands for training of the farmers on the use of modern farm facilities and rice production in Ayamelum LGA respectively. It is accurate to the study since the problematic took place in the past and it is still going on, hence,  $O_a O_b O_c O_d$  stands for the before observations while  $O_e O_f O_g O_h$  symbolizes after-measurement. Survey and documentary methods were utilized for data collection through questionnaire, which enhance generation of data from both the primary and the secondary sources. Population of the study is farmers in LAIP, which is federal government’s establishment located at Ayamelum LGA. Ayamelum is comprised of eight communities such as Umumbo, Umueje, Umerum, Omor, Omasi, Igbakwu, Ifite-Ogwari, and Anaku,. According to the National Population Census (2006), population of Ayamelum LGA is 158,152 which composed of 81,065 male and 77,087 female with the distributions below: Anaku (15,640); Igbakwu (9,060); Ifite-Ogwari (25,723); Omasi (10,647); Omor (70,228); Umerum (10,229); Umeje (6,257); Umumbo (10,360) (NBS, 2010) as demonstrated in table 1 below

**Table 1:** Age Clusters of Population in Ayamelum LGA, Anambra State

S/N	Age Bracket	Population
1	0-9	40,512
2	10-19	37,649
3	<b>20-29</b>	<b>28,487</b>
4	<b>30-39</b>	<b>19,132</b> <b>70,542</b>
5	<b>40-49</b>	<b>14,292</b>
6	<b>50-59</b>	<b>8,631</b>
7	60-69	5,009
8	70-79	2,511
9	80 and above	1,929

Source: National Bureau of Statistics (2010)

The active age for farming as demonstrated on the table above ranges from 20-59 years with the total population of 70,542. Considering fecundity of the lands in the communities, the authority laid much emphasis on four communities such as Ifite-Ogwari, Omor, Umerum and Umumbo with less consideration of the remaining areas, which included Anaku, Igbakwu, Omasi and Umueje. However, the LAIP developed about five thousand hectares of land (5,000) and irrigated three thousand eight hundred and fifty (3,850) irrigable areas. During my interview with the Project Manager (PM), Mr. Egwu, M. Friday, he revealed that the number of farmers in LAIP was around six thousand (6,000), which informed the population of study. For proper coverage, the sample size was generated from the farming communities in Ayamelum LGA accordingly with much consideration of the identified active farming age (20-59) as indicated on the above table. Nevertheless, the communities and their populations are demonstrated on the table below:

**Table 2:** Populations of Communities in Ayamelum LGA

S/N	Communities	Populations
1	Anaku	10,648
2	Ifite-Ogwari	18,723
3	Igbakwu	9,060
4	Omasi	10,647
5	Omor	70,228
6	Umerum	15,229
7	Umeje	6,257
8	Umumbo	17,360
	<b>Total</b>	<b>158,152</b>

Source: National Bureau of Statistics (2010)

The sample size of our population of 6,000 farmers was determined from presentation of suitable samples from different population by Krejcie and Morgan (1970). Hence, the population of 6,000 farmers fell on 361 which finally became our sample size. Thus, our sample size for questionnaire distribution became 361 respondents. Using Purposive Non-random Sampling method, we selected 361 respondents from the farmers in LAIP with much consideration of populations of their communities as illustrated on the table below

**Table 3:** Sample Size of Population of Farmers by Communities in LAIP

S/N	Communities	Population of Farmers	Sample Size
1	Anaku	316	35
2	Ifite-Ogwari	500	45
3	Igbakwu	228	33
4	Omasi	253	35
5	Omor	3,317	80
6	Umerum	594	49
7	Umueje	129	23
8	Umumbo	654	54
9	Others	16	7
	<b>Total</b>	<b>6,007</b>	<b>361</b>

Source: LAIP Annual Statistical Report, 2016

We administered unstructured questionnaires to these population samples, which enabled us to get insight into the variables under examination and allow our respondents to give all details about the problematic. More so, non-probability sampling technique is employed for choosing the population sample for the interview with staff of LAIP. Thus, we select three staff of the LAIP using Purposive Sampling method for an interview. We used qualitative and quantitative methods for data analysis. Quantitatively, descriptive statistical method was adopted through the usage of tables, charts and percentages in the representation of data. Qualitative analysis on the other hand, suggested application of qualitative descriptive method of analysis mixed up with textual analysis.

## 1. Training of Farmers and Rice Production in Ayamelum

The intervention of government in agriculture through provision of modern facilities for rice production is one thing; another salient issue is the knowledge of the applications of the provided facilities. This is more reason the government equally engaged in the training of the farmers for adequate rice production. This is done through organization of workshops and seminars for the farmers. However, this segment of the paper is fashioned to unravel the link between the farmers' training of in LAIP and production of rice in Ayamelum LGA. This training stems from imbibing and acquisition of requisite knowledge on when and how to cultivate land for rice production. To ensure unfettered rice production rate in LAIP, the government, as part of her mandates cum rules of engagements made it compulsory that the farmers would be taught the beneficial methods and processes of rice cultivation (Okigbo, 1981). At the inception, the programme was undertaken at least two times in every farming year. This technological knowhow involves among others, the period to start rice farming which correspondingly has much to do with the harvesting time, for instance, during the time of two season cultivation (wet and dry) the farmers were taught to start the dry season by February to be harvested by June and resume the wet season by July and to harvest it in November. More so, the best method of cultivation such as transplanting and broadcasting as well as the spacing techniques were also instructed to the prospective farmers. Under here, one can either transplant or broadcast. In transplanting, the number to be put in a particular hole as well as the spacing formula is specified. The broadcasting range is as well determined during the training (workshops or seminars) (FMAWR, 2008). Another vital aspect of the training is when to apply water and the durable water level for proper rice yield. Emphatically, it was categorically stressed that on no account that water level in rice field will be above the crop. As a result, before one can broadcast, it was advised that the land would be properly drained to avoid being water logged that will eventually destroy the seeds. Based on this, after germination of broadcast seeds or transplanting as the case may be, the farmers should be regulating the water level to be below the height of the crops through the proper management of the water inlets and drainages. From the training also, the farmers are directed on how and periods for application of chemical such as fertilizers, herbicides and insecticide for proper rice yield. Unequivocally, herbs/weeds and insects are the greatest enemy of farmers, therefore, herbs and insect controls are part of the fundamental reasons for the government intervention in training and retraining of the farmers (FAOSTAT, 2014). Before, actual broadcasting, farmers were instructed to apply herbicides on the ploughed land so as to kill the seeds of impending grasses. Subsequently, it would be applied again after about one month of germination of the broadcast rice to eliminate the little weeds that grew when the land is drained for germination of the rice seeds. Sequel to this, water would be applied to cover the land

surface so as to prevent weeds from growing on the farm land (Verter & Becvarova, 2014). Disappointedly, insects affect rice in different ways. Some are visible which made them to be easily detected while some are not visible therefore, cannot be deciphered physically. The visible insects destroy or change the colours of the leaves, which finally affect quantity and quality of rice yield whereas invisible ones affect the stalks of rice thereby delaying the yield of the crop unnecessarily. To avoid the incidence, the farmers were advised to apply the chemical (insecticide) during the growth of the crop to forestall impending infestation of the insects on the farmland (Nasiru, 2014). Most importantly, since the shifting cultivation is no more feasible as a result of restrictions on cultivation of limited parcels of land, fertilizer application became imperative. Therefore, the types, the time and quantity to be applied were what the delegates of the government directed the farmers. The necessary fertilizers types for adequate rice yield are the proper combinations of NPK and Urea. The former is responsible for rice growth and development which means that it should be applied when the crop is growing, while the latter enhanced bountiful yield of the crop, for that the application would be the period of feeding of the crop. Worthy of note is that excess application of the product has negative effect of making the stalk leafy which at the same time not healthy for normal crop yield, therefore, a plot of land requires around four bags of fertilizer for optimum yield. It is equally detrimental to apply fertilizer where there is no water, because fertilizer works perfectly well where there is water in the land (Onumadu & Osahon, 2014). On the harvesting stage, usage of combined harvesters which concurrently cut and thresh rice was encouraged as against adoption of manual labour for

undertaking the responsibility of harvesting rice. Nevertheless, significant emphasis was laid on the operation of the combine harvester. Processing of the harvested rice is not excluded from the training and retraining of the farmers in LAIP. This ranges from parboiling, milling and de-stoning. It was on the conviction to enhance a well-processed rice that made government to install a giant mill which has the capacities of parboiling, milling and de-stoning rice (Umeh & Chukwu, 2015).

**2. Data presentation and analysis**

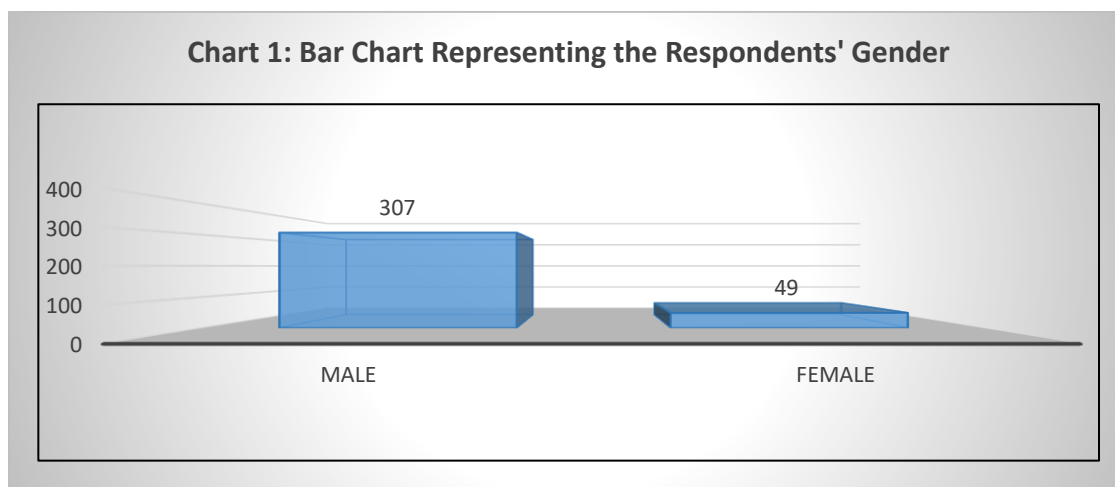
This section of the chapter dealt on the analysis of our survey field research. Our aim here is to provide the nexus between the variables (training and rice production). The section (A) part of the analysis gives information on the bio-data of our respondents who are the farmers in LAIP. Whereas the section (B) dealt on the training of the farmers on the use of farm facilities and production of rice in Ayamelum LGA.

**Section A: Bio-Data of Respondent**

**Table 4:** Respondents' Gender

Respondents' Gender			
S/N	Gender	Frequency	Percentage
1	Female	49	14%
2	Male	307	86%
	<b>Total</b>	<b>356</b>	<b>100%</b>

Source: Author's Fieldwork (2023).



Source: Author's Fieldwork (2023)

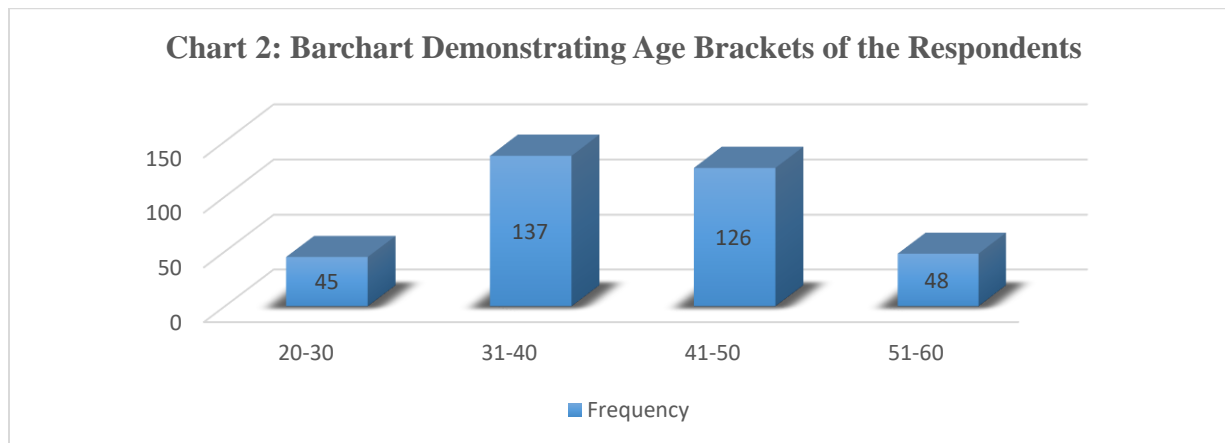
The table 4 and chart 1 above demonstrated the respondents' gender. Decipherable from them is that the majority of the farmers are males, which means that farming in the area of

investigation is mostly done by males. The males are 307 respondents (86%) while female recorded 49 respondents (14%).

**Table 5:** Age Brackets of Respondents

Age Brackets of Respondents			
S/N	Age	Frequency	Percentage
1	20 years to 30 years	45	13%
2	31 years to 40 years	137	39%
3	41 years to 50 years	126	35%
4	51 years to 60 years	48	14%
	<b>Total</b>	<b>356</b>	<b>100%</b>

Source: Author's Fieldwork (2023)



Source: Author's Fieldwork (2023)

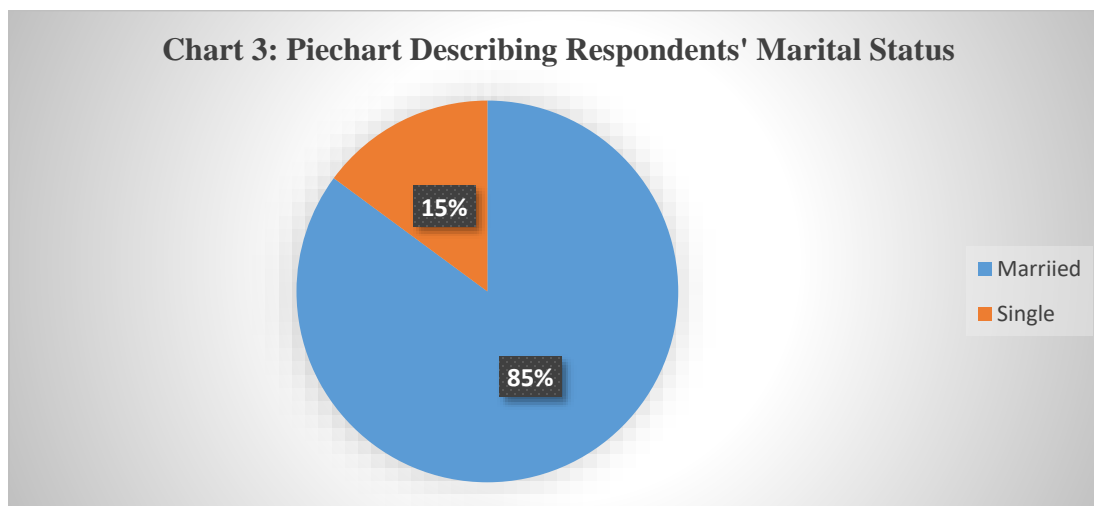
The table 5 and chart 2 above showed the respondents' age brackets. Identifiable from them is that the age brackets of the

respondents are in the following order: 31-40 = 137 (39%), 41-50 = 126 (35%), 51-60 = 48 (14%), 20-30 = 45 (13%).

**Table 6:** Respondents' Marital Status

Respondents' Marital Status			
S/N	Status	Frequency	Percentage
1	Married	303	85%
2	Single	53	15%
	<b>Total</b>	<b>356</b>	<b>100%</b>

Source: Author's Fieldwork (2023)



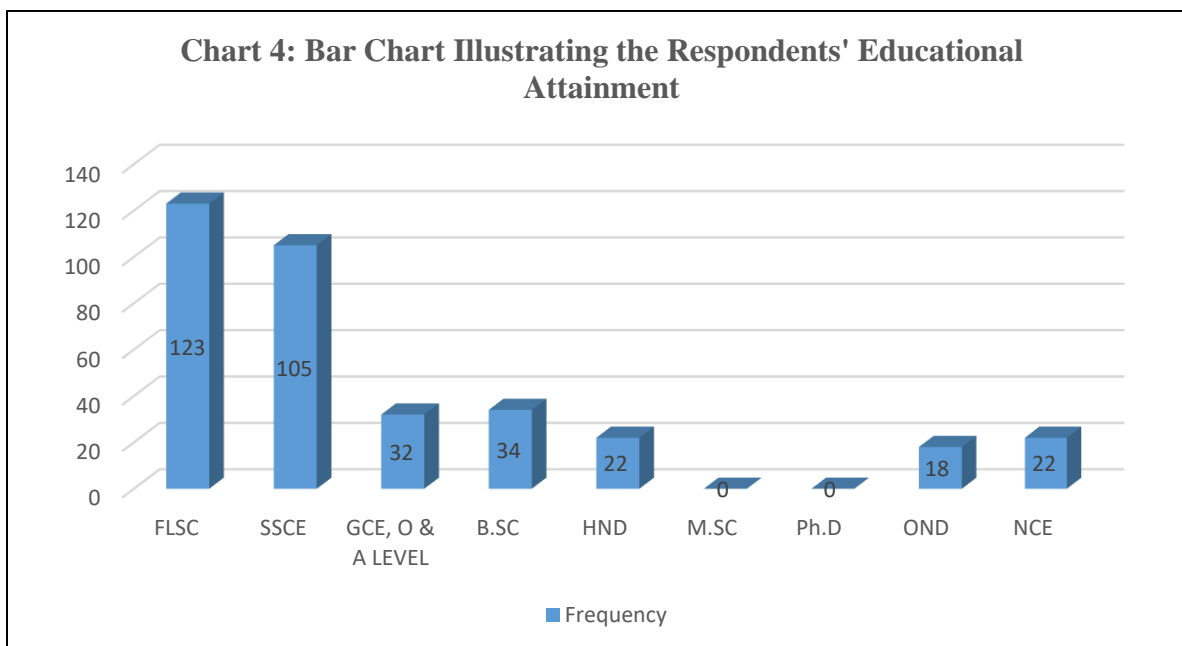
Source: Author's Fieldwork (2023)

The table 6 and chart 3 above showcased the marriage status of the respondents thus: married 303 (85%) and single 53 (15%).

**Table 7:** Respondents’ Educational Attainment

Respondents’ Educational Attainment			
S/N	Educational Attainment	Frequency	Percentage
1	FSLC	123	35%
2	SSCE	105	30%
3	G.C.E., O & A Levels	32	9%
4	BSc	34	10%
5	HND	22	6%
6	MSc	0	0%
7	Ph.D	0	0%
8	OND	18	5%
9	NCE	22	6%
	<b>Total</b>	<b>356</b>	<b>100%</b>

Source: Author’s Fieldwork (2023)



Source: Author’s Fieldwork (2023)

Extrapolation from the table 7 and chart 4 above is that the respondents’ educational attainment are in the following order: FSLC = 123 (35%), SSCE = 105 (30%), B.Sc. = 34 (10%), GCE

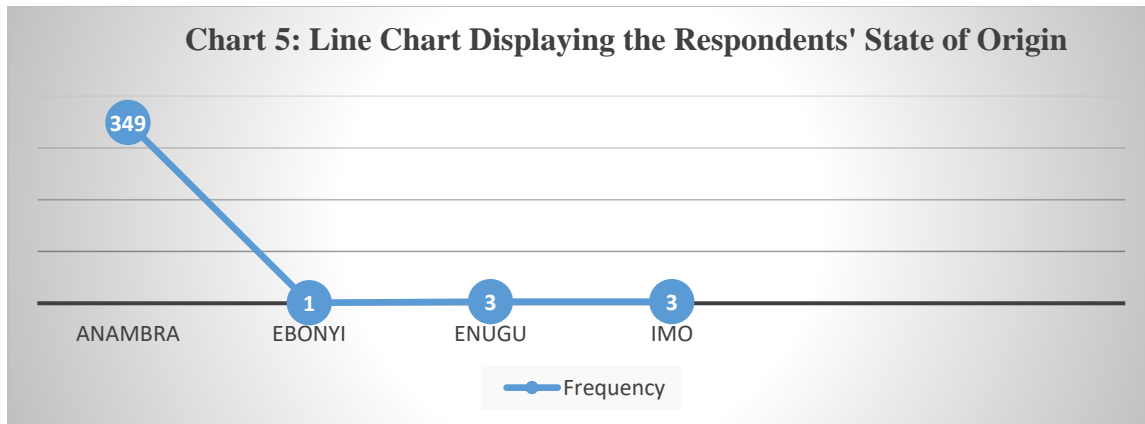
= 32 (9%), HND = 22 (6%), NCE = 22 (6%), HND = 18 (5%). Finally, M.Sc. and PhD recorded zero respondents.

**Table 8:** Respondents’ State of Origin

Respondents’ State of Origin			
S/N	State	Frequency	Percentage
1	Anambra	349	98%
2	Ebonyi	1	0%
3	Enugu	3	1%
4	Imo	3	1%
	<b>Total</b>	<b>356</b>	<b>100%</b>

Source: Author’s Fieldwork (2023)





Source: Author's Fieldwork (2023)

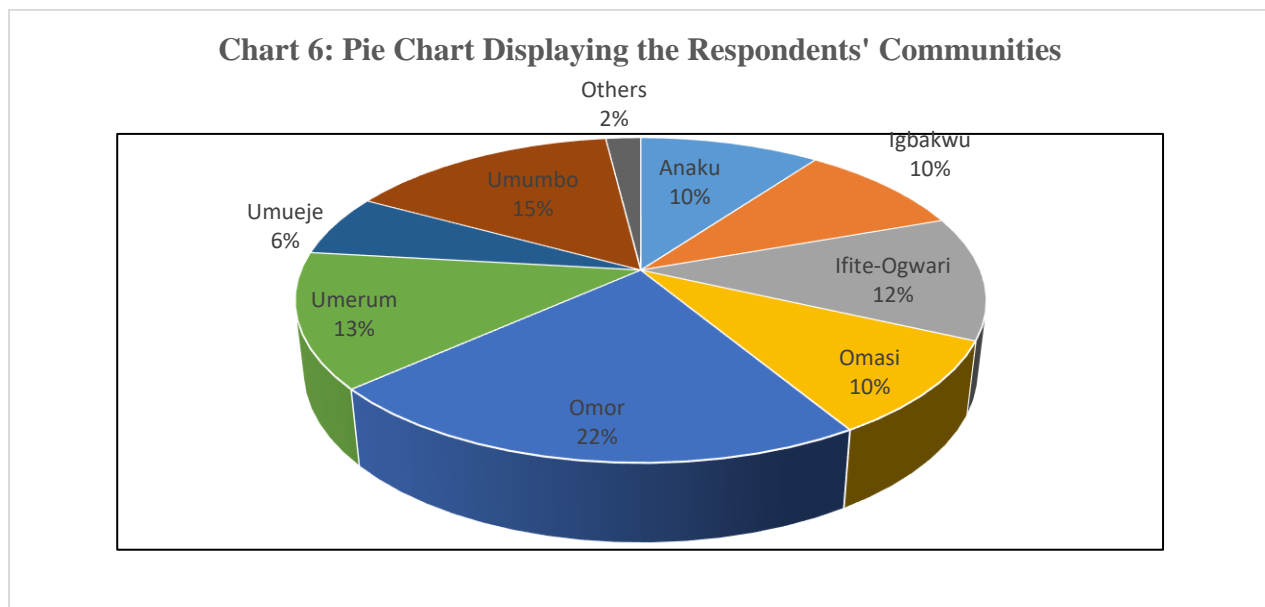
The table 8 and chart 5 above demonstrated the respondents' state of origin thus:

Anambra State = 349 (98%), Ebonyi = 1 (0%), Enugu = 3 (1%) and Imo = 3 (1%).

Table 9: Respondents' Communities

Respondents' Communities			
S/N	Communities	Frequency	Percentage
1	Anaku	36	10%
2	Igbakwu	32	9%
3	Ifite-Ogwari	44	12%
4	Omasi	34	10%
5	Omor	79	22%
6	Umerum	48	14%
7	Umueje	22	6%
8	Umumbo	54	15%
9	Others	7	2%
	<b>Total</b>	<b>356</b>	<b>100%</b>

Source: Author's Fieldwork (2023)



Source: Author's Fieldwork (2023)

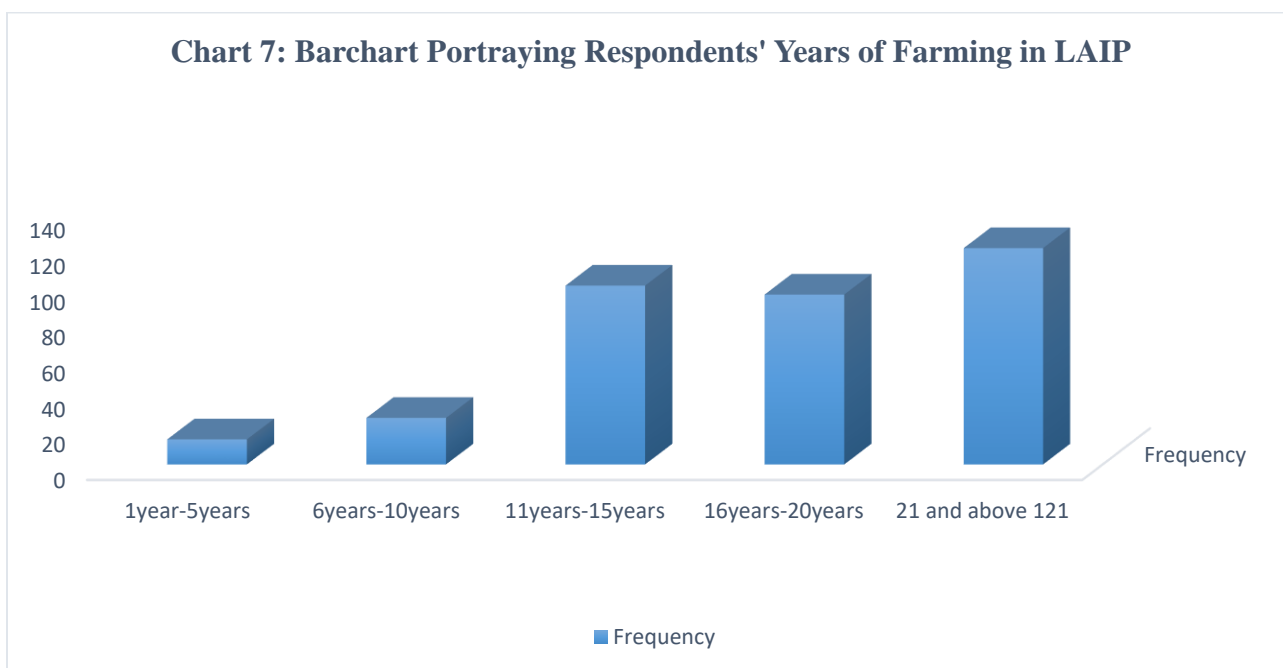
Identifiable from the table 9 and chart 6 above is that Ayamelum LGA is made up of 8 communities with proportional representation in the following order: Anaku 36 (10%), Igbakwu

32 (10%), Ifite-Ogwuari 44 (12%), Omasi 34 (10%), Omor 79 (22%), Umerum 48 (13%), Umueje 22 (6%) Umumbo 54 (15%) and Others 7 (2%).

**Table 10:** Respondents 'Years of Farming in LAIP

Respondents ' Years of Farming in LAIP			
S/N	Years	Frequency	Percentage
1	1 – 5Years	14	4%
2	6 – 10Years	26	7%
3	11 – 15Years	100	28%
4	16 – 20Years	95	27%
5	21 and above	121	34%
<b>Total</b>		<b>356</b>	<b>100%</b>

Source: Author's Fieldwork (2023)



Source: Author's Fieldwork (2023)

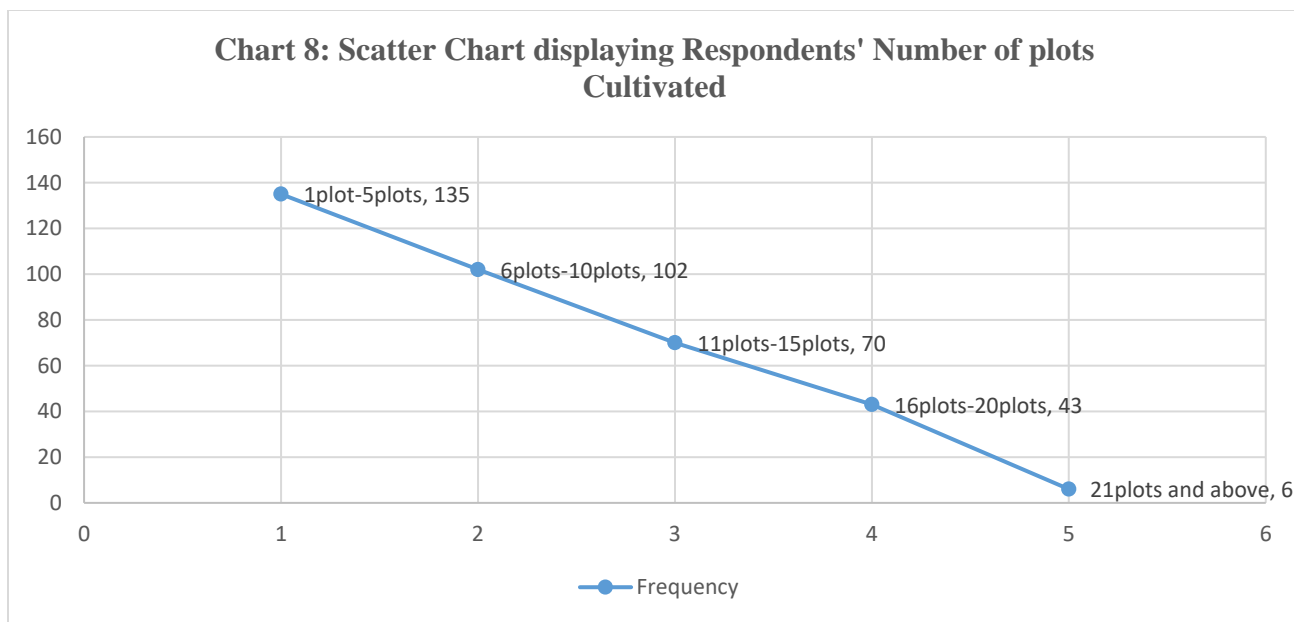
Decipherable from the table 10 and chart 7 above is thus: 121 = 21 years and above (34%), 1-5 years = 14 (4%),

6-10 years = 26 (7%), 11-15 years = 100 (28%), 16-20years = 95 (27%).

**Table 11:** Respondents' Number of Plots Cultivated

Respondents' Number of Plots Cultivated			
S/N	Plots	Frequency	Percentage
1	1–5plots	135	38%
2	6–10plots	102	29%
3	11–15plots	70	20%
4	16–20plots	43	12%
5	21 and above	6	2%
<b>Total</b>		<b>356</b>	<b>100%</b>

Source: Author's Fieldwork (2023)



Source: Author's Fieldwork (2023)

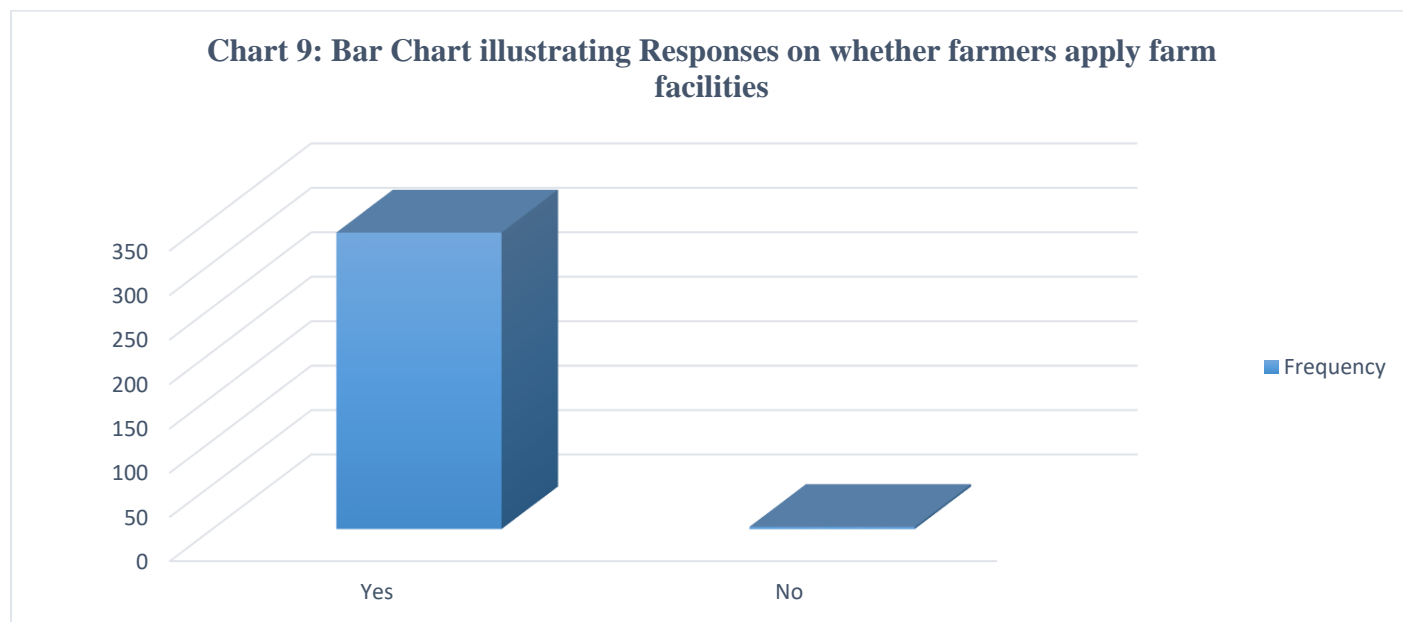
Observable from the table 11 and chart 8 above is in the following order: 1-5 plots = 135 (38%) 6-10 plots = 102 (29%),

11-16 plots = 70 (20%), 16-20 plots = 43 (12%) and 21 and above plots = 6 (2%).

Table 12: Respondents' Responses to 'have you been applying farm facilities in your farm?'

Respondents' Responses to 'have you been applying farm facilities in your farm?'			
S/N	Responses	Frequency	Percentage
1	Yes	334	94%
2	No	22	6%
	<b>Total</b>	<b>356</b>	<b>100%</b>

Source: Author's Fieldwork (2023)



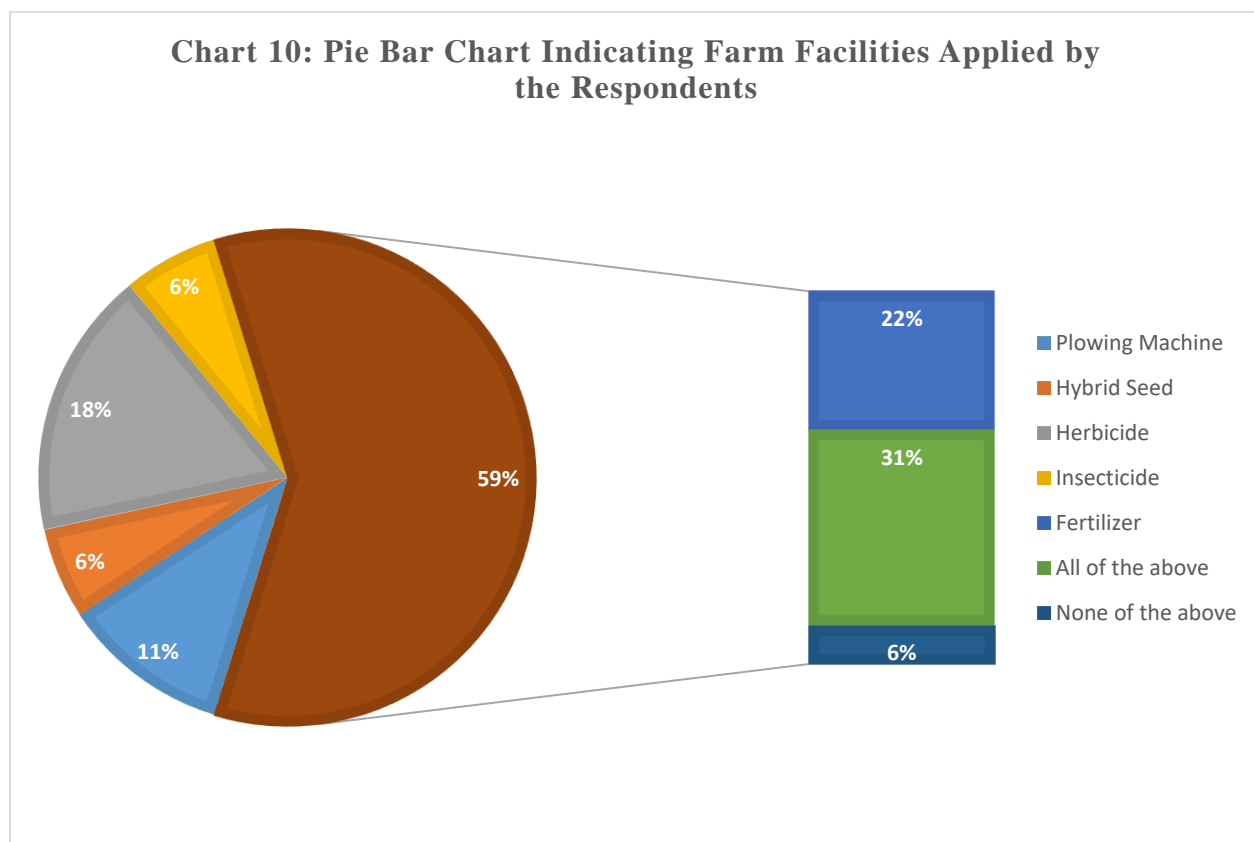
Source: Author's Fieldwork (2023).

The table 12 and chart 9 indicated that 334 (94%) answered ‘YES’ whereas 22 (6%) responded ‘NO’.

**Table 13:** Types of farm facilities applied by the farmers in LAIP

Types of farm facilities applied by the farmers in LAIP			
S/N	Farm Facilities	Frequency	Percentage
1	Ploughing Machine	39	11%
2	Hybrid Seed	21	6%
3	Herbicide	62	17%
4	Insecticide	22	6%
5	Fertilizer	79	22%
6	All of the above	111	31%
7	None of the above	22	6%
	<b>Total</b>	<b>356</b>	<b>100%</b>

Source: Author’s Fieldwork (2023).



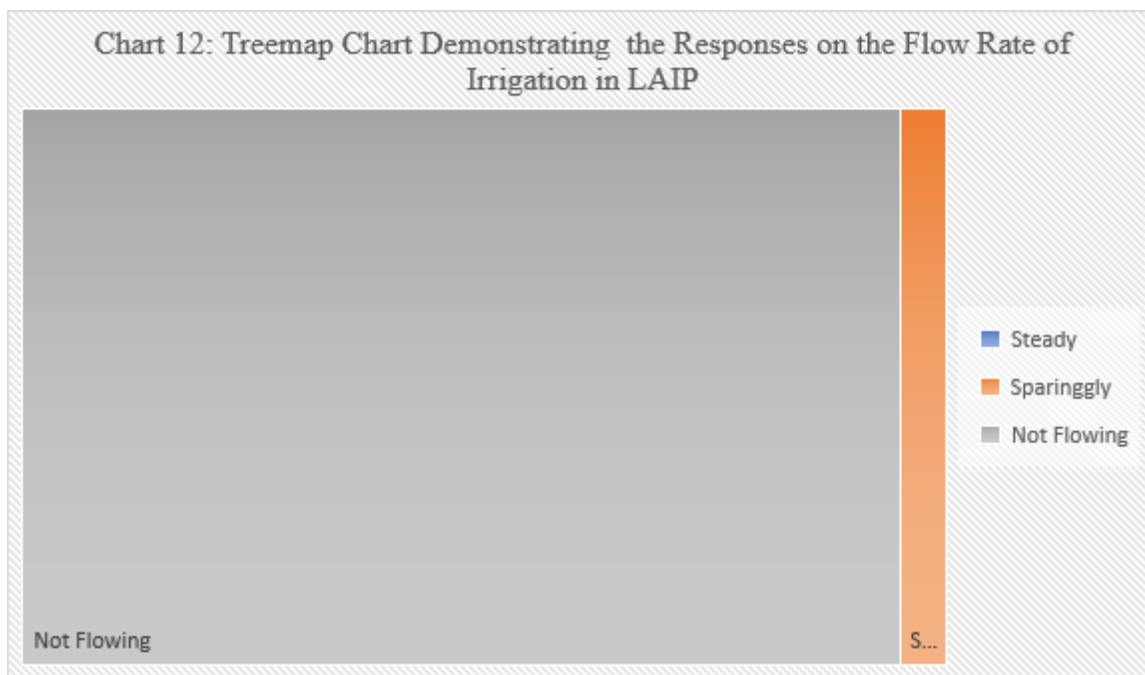
Source: Author’s Fieldwork (2023).

The table 13 and chart 10 above demonstrated the farm facility application in the following order: fertilizers 79 (22%), herbicide 62 (17%), ploughing machine 39 (11%), Insecticide= 22 (6%), none of the above 22 (6%) and hybrid seed 21 (6%).

**Table 14:** Respondents’ Responses of on the flowing rate of irrigated water in LAIP

Respondents’ Responses of on the flowing rate of irrigated water in LAIP			
S/N	Flowing Rate	Frequency	Percentage
1	Steady flowing	-	-
2	Sparingly flowing	18	5%
3	Not Flowing	338	95%
	<b>Total</b>	<b>356</b>	<b>100%</b>

Source: Author’s Fieldwork (2023)



Source: Author’s Fieldwork (2023)

In the course of our interview with the Project Manager of LAIP, Mr. Friday Egwu we learnt that what made the irrigation not flowing steady were (1) that the pumping station has some technical faults (2) the canals were destroyed by the illegal fishing activities of the farmers and (3) the control system

mechanism installed for proper coordination of water flow has been vandalized. Nonetheless, the effect of the non-flowing of irrigation in LAIP is shown and discussed in the table 22 and chart 13 below.

Table 15: Responses on the Seasons farmers have cultivated Rice

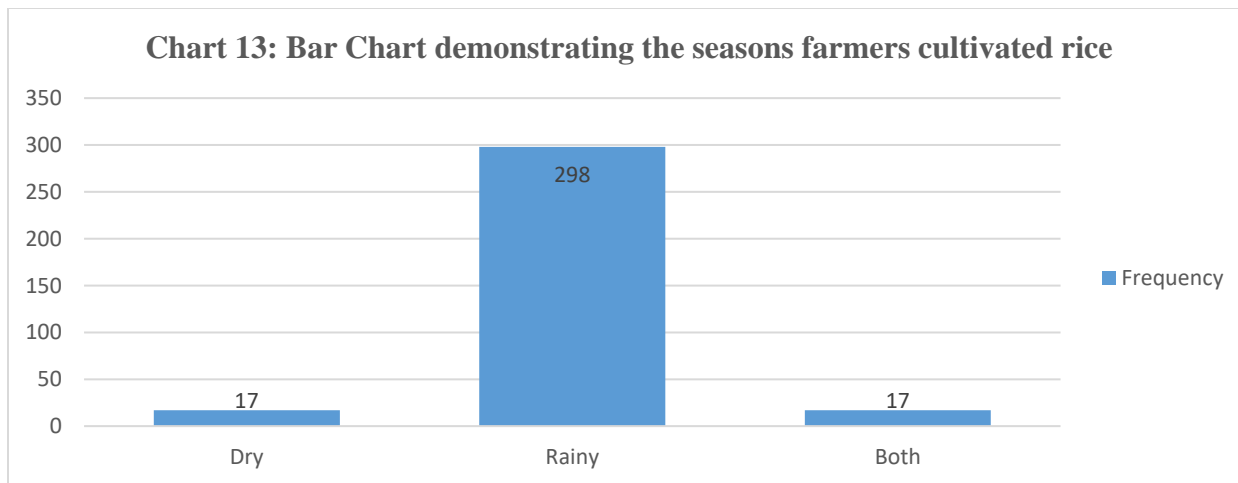
Seasons farmers have cultivated Rice			
S/N	Seasons	Frequency	Percentage
1	Dry Season	29	8%
2	Rainy Season	298	84%
3	Both Seasons	29	8%
	<b>Total</b>	<b>356</b>	<b>100%</b>

Source: Author’s Fieldwork (2023)

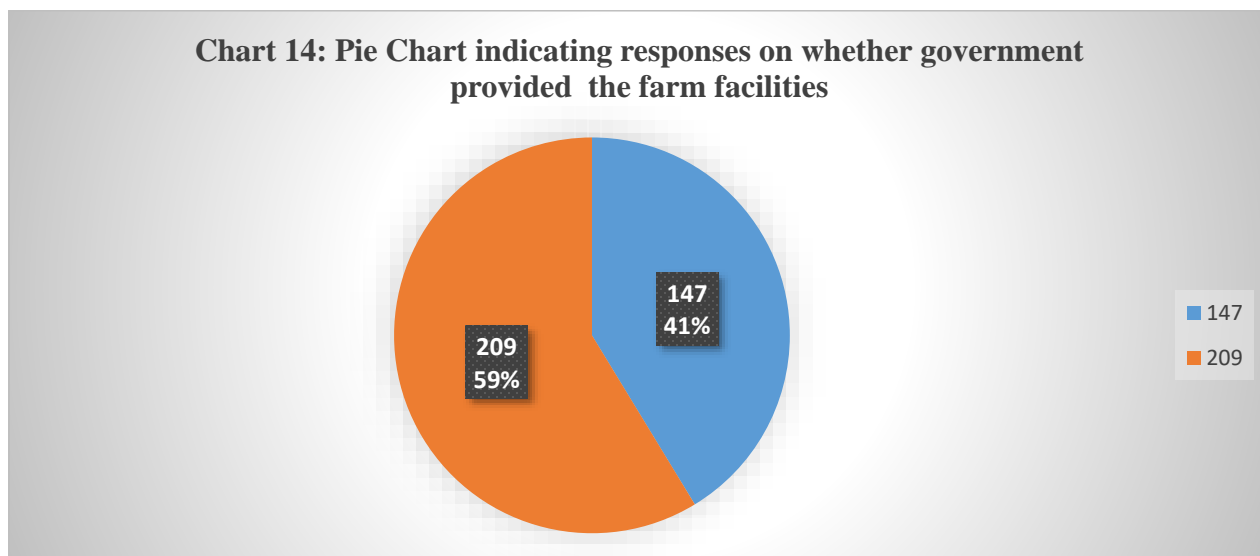
Table 16: Responses on whether the farm facilities were provided by government

Does the government provide the farm facilities?			
S/N	Responses	Frequency	Percentage
1	Yes	147	41%
2	No	209	59%
	<b>Total</b>	<b>356</b>	<b>100%</b>

Source: Author’s Fieldwork (2023)



Source: Author’s Fieldwork (2023).



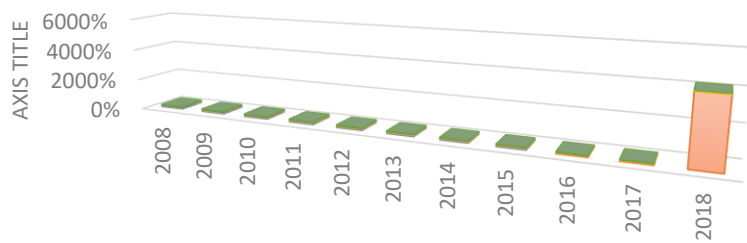
Source: Author’s Fieldwork (2023)

**Table 17:** farm facilities provided by government in different years

Percentage of farm facilities provided by government in different years						
Facilities	Hybrid Seeds(%)	Herbicides(%)	Insecticide(%)	Fertilizer(%)	Ploughing Machines(%)	Mower(%)
Years						
2008	43%	24%	-	28%	47%	40%
2009	40%	32%	-	28%	42%	34%
2010	41%	30%	-	33%	44%	32%
2011	38%	41%	-	35%	36%	31%
2012	29%	39%	-	37%	35%	28%
2013	29%	40%	-	37%	28%	28%
2014	29%	36%	-	39%	24%	26%
2015	37%	38%	-	30%	20%	25%
2016	-	40%	-	41%	19%	20%
2017	-	41%	-	44%	10%	15%
2018	-	41%	-	43%	-	-

Source: Author’s Fieldwork (2023)

**Chart 15: Bar Chart displaying percentages of farm facilities provided by government in different years**



	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Mower	34%	34%	32%	31%	28%	28%	26%	25%	20%	15%	0
Plowing Machines	47%	42%	44%	36%	35%	28%	24%	20%	19%	10%	0
Fertilizer	28%	28%	33%	35%	37%	37%	37%	30%	41%	44%	43%
Insecticides	0	0	0	0	0	0	0	0	0	0	0
Herbicides	24%	32%	30%	41%	39%	40%	36%	38%	40%	41%	41
Hybrid Seed	43%	40%	41%	38%	29%	29%	29%	37%	0	0	0

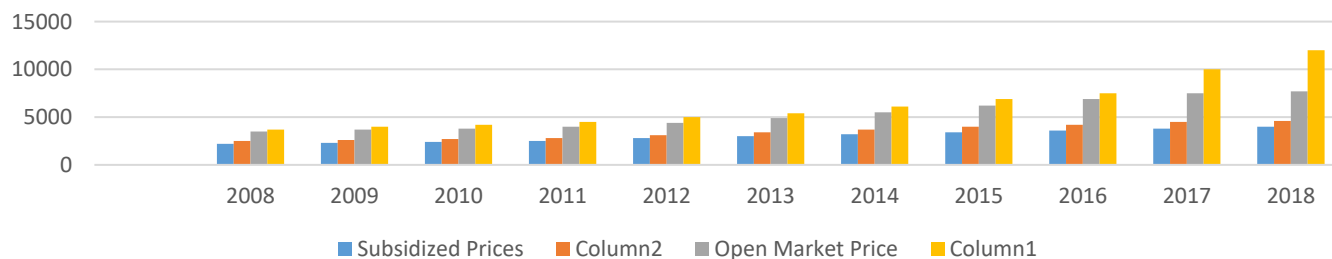
Source: Author's Fieldwork (2023)

**Table 18: Subsidized and Open Market Prices of Fertilizer in the Years**

Year	Subsidized Prices		Open Market Prices	
	Urea	NPK	Urea	NPK
2008	2,200	2,500	3,500	3,700
2009	2,300	2,600	3,700	4,000
2010	2,400	2,700	3,800	4,200
2011	2,500	2,800	4,000	4,500
2012	2,800	3,100	4,400	5,000
2013	3,000	3,400	4,900	5,400
2014	3,200	3,700	5,500	6,100
2015	3,400	4,000	6,200	6,900
2016	3,600	4,200	6,900	7,500
2017	3,800	4,500	7,500	10,000
2018	4,000	4,600	7,700	10,000

Source: Author's Fieldwork (2023)

**Chart 16: Multiple Bar Chart Illustrating the Subsidized and Open Prices of Fertilizers**



Source: Author's Fieldwork (2023)

The practical reflection of the subsidization regime is the prices that the subsidized fertilizers are sold as against the open market price. Be that as it may, the table and chart above displayed the prices of open market and subsidized fertilizers. For the purpose of clarity, the two major brands of fertilizer-Urea and NPK were emphasized in their different prices. For instance, subsidized Urea and NPK in 2008 was #2,200.00 and #2,500.00 respectively whereas the open market prices were #3,500.00 and #3,700.00 respectively. From all indications on the table over the farming year, the differences from the subsidization and open market prices appeared to be around #1,000.00. After the 2008,

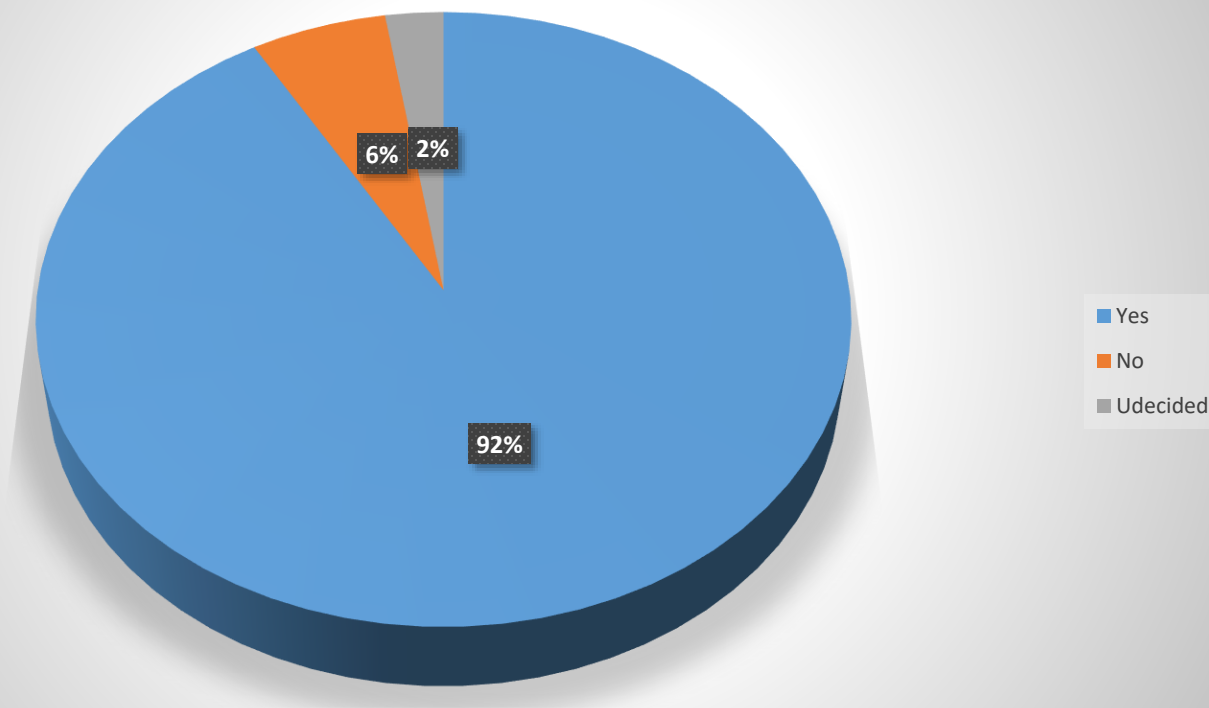
the discrepancies between the subsidized fertilizer and open market prices escalated, this is conspicuously observable in the 2017 and 2018. In 2017, the subsidized Urea and NPK were #3,800.00 and #4,500.00 respectively while the open market prices were #7,500.00 and #10,000.00 respectively. The similar scenario is discerned in 2018 where the subsidized prices of Urea and NPK were as follows: #4,000.00 and #4,600.00 respectively whereas the open market was #7,700.00 and #12,000.00. The ripple effects of the hike in prices might have reflected in the application of the inputs as well as the yielding capacity of the crop as discussed in the succeeding segment of the study.

**Table 19:** Responses of Respondents on whether they have Experienced Crop Failure

Respondents on whether they have Experienced Crop Failure			
S/N	Responses	Frequency	Percentage
1	Yes	326	91%
2	No	21	6%
3	Undecided	9	3%
	<b>Total</b>	<b>356</b>	<b>100%</b>

Source: Author's Fieldwork (2023)

**Chart 17:** Pie Chart illustrating the responses of respondents on whether they have experienced crop failure



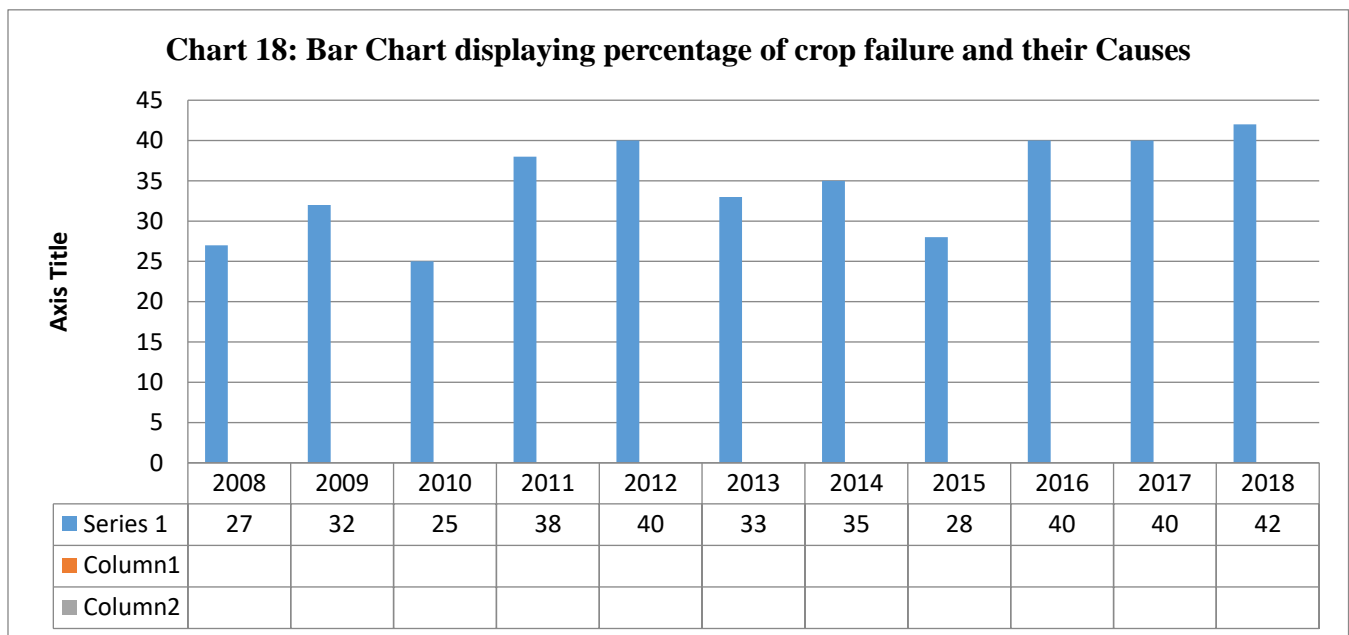
Source: Author's Fieldwork (2023)



Table 20: Years Respondents Recorded Crop Failure

Years and percentage of crop failure and causes recorded by farmers		
Year	Percentage	Causes
2008	27	Inadequate provision of herbicides
2009	32	Inadequate supply of ploughing machines
2010	25	Reliance on inconsistent and epileptic rainfall
2011	38	Inadequate provision of herbicides
2012	40	Inadequate provision of herbicides
2013	33	Reliance on inconsistent and epileptic rainfall
2014	35	Inadequate provision of hybrid seeds
2015	28	Inadequate provision of hybrid seeds
2016	40	Inadequate application of insecticides
2017	40	Inadequate application of fertilizer
2018	42	Inadequate application of fertilizer

Source: Author's Fieldwork (2023)



Source: Author's Fieldwork (2023)

### 3. Summary and prognoses

The study interrogated the nexus between training of farmers in LAIP on the use of modern farm facilities and production of rice in Ayamelum Local Government Area. We garnered data from primary and secondary sources via questionnaire and documentary techniques respectively. The data were subsequently analyzed through the aids of charts, tables and content analysis. Theoretically, we adopted modernization theory, which maintained among other propositions that the cause of underdevelopment in the third world countries is their inability to shove off traditional ways and adopt modern strategies in tackling developmental issues. This implies that for

the third world countries to develop, they should emulate and follow the developmental steps of the western world. Similarly, for rice production to be enhanced in Ayamelum LGA of Anambra state, the farmers must learn through training the proper application of the modern farm facilities. In the course of the study, we distributed 361 questionnaire to our respondents (farmers) after which 356 questionnaires were returned and correspondingly analyzed. From the analysis, we found out that the training of the farmer in LAIP on the use of modern farm facilities did not impact on rice production in Ayamelum because of the inadequacy and inconsistency of the government in handling the programme. Also, the farmers' response to the

programme was far from encouraging because their attendance was consistently poor. As a result of the observed anomaly, the farmers recorded all time loss engendered by improper application of some farm facilities thereby affecting rice production in Ayamelum negatively.

However, we suggested that the government should bring in more innovations to farmers in LAIP and judiciously train them on how to apply them (facilities) for adequate rice production in Ayamelum LGA. This will go a long way in curbing unnecessary loss warranted by wrong application of modern farm facilities. The farmers on the other hand are advised to be receptive and open to novel ideas, which will be introduced to them through seminars or workshops as the case may be. If the above suggestions are utilized, it will enhance production of rice in Ayamelum Local Government Area in Anambra state.

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