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Agricultural Economic Study of Rice Threshing in SW Nigeria

By

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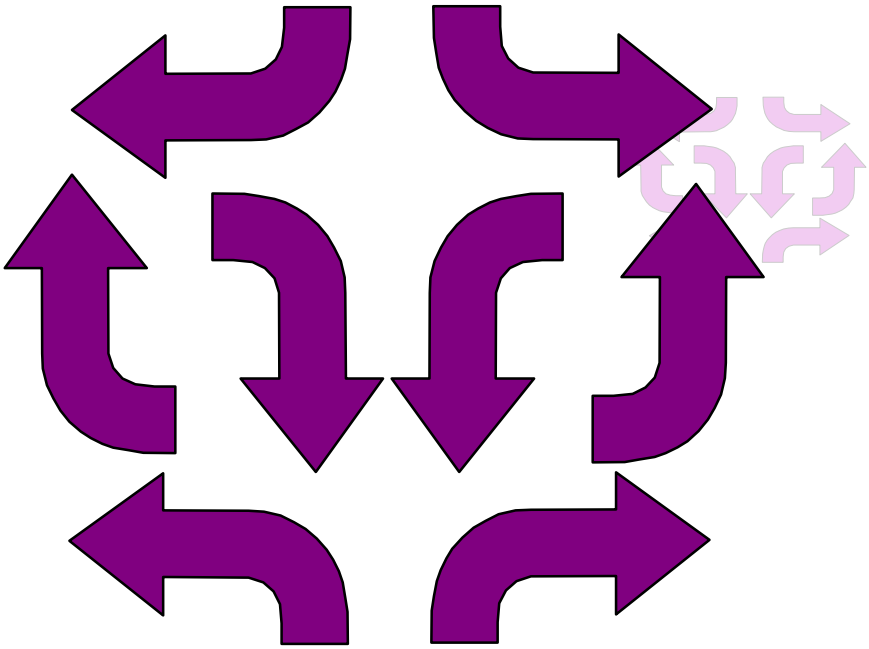

A Technical Report On
Ag Economics Study on Rice Threshing in SW Nigeria

Submitted To
The Director of Operations
Promoting Pro Poor opportunities Through Commodities and Service Markets (PrOpCom)

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Table of Contents

List of Tables

EXECUTIVE SUMMARY

The use of threshing machines in substitution for traditional methods of rice threshing has been widely adopted in other locations across the country over the years. This study was therefore undertaken to investigate the reasons, financial and socio-economic implications of manual rice threshing and other possible factors that could influence the adoption of mechanized rice threshing in Southwestern Nigeria. In Specific the study focused predominantly on issues such as:

- Economic activities and scale of rice producing households
- Average number of farmland
- Total yield per hectare using manual threshing
- Total loss to grain splitting and rice head breaks per hectare yield using manual threshing
- Total cost of threshing yield/hectare
- Total cost winnowing yield/hectare
- Total labor requirement for threshing yield/hectare
- Total labor requirement for winnowing yield/hectare
- Average labor wage rate per day for threshing
- Average labor wage rate per day for winnowing
- Time taken to thresh yield/hectare
- Time taken to winnow yield/hectare

In conducting this study, a total of 120 respondents were targeted, consisting of 80 farm households, and 40 manual threshing service providers in four of the SW states (Lagos, Ogun, Osun and Ekiti). of this, we succeeded in interviewing 78 farm household and 31 manual threshing and winnowing providers, thus achieving an overall 87% success rate. In conducting these interviews, executive interviewers visited Ekiti, Osun, Ogun and Lagos States using semi structured survey instruments in capturing relevant but useful data. Respondents were randomly selected from rice growing areas in these states, where interviews were conducted with members of farm households and on one on one basis with manual threshing/winnowing service providers.

From the outcome of this survey, it was observed that most of the farm household leadership were male as expected, aged well over 50years and hardly educated. About 80% of them having been in rice cultivation for well over ten years. Talking in terms of accessibility of the farm households to farmland, it was observed that on the average, a typical household has access to three farmland, out of which two were reportedly cropped last year. Generally, most of the families interviewed reportedly cultivated about three hectares in the previous season, predominantly, to short grain rice with an average yield of 1.44 Mt per hectare. Long and medium grain rice were hardly cultivated, but for some few farmers who we believe did so under contract and had access to unusually large farm holdings (11 to 20 hectares). Information from these unusually large scale operators (about four in number) were generally not considered along with others, as they were distorting the data obtained from this rather small sample size. These notwithstanding, it was quite interesting to note that this group of farmers and their subsistence counterparts, had no access to mechanised threshing services, with most of the farmers reportedly unaware of mechanical rice threshing and winnowing machines.

Talking about grain loss due to manual threshing and winnowing methods, farm households across the region of interest reported 15%, 13% and 12% in 2006, 2007 and 2008 respectively. The yield per hectare after threshing takes into account the discounting of losses incurred as a result of threshing and winnowing. Generally speaking, farmers claimed that they required 4 man-days to thresh a Mt of paddy rice in year 2006, 2007 and 2008, while within the same period, 7, 6, and 6 man days respectively were reported as being required to thresh a hectare of rice field within the same period. It was observed that it cost about N7,000 to thresh a hectare

of rice field and N4,912 to thresh a Mt of paddy rice. Specifically, it cost about N6,165 to winnow a hectare of rice field and N4,281 to winnow a Mt of paddy rice. These are unacceptably high costs of production, which could be significantly reduced by mechanising threshing and winnowing operations. Our findings also revealed that a handful of farmers had in the past, actually tried out mechanised threshing of their rice paddy.

In location after location, farmers' households claimed not to have even seen a threshing machine talk-less of having access to it or its services. While manual paddy rice threshing within the SW region may have its roots in historical and traditional practices, the laborious, tiring, time consuming and costly nature of manual rice threshing is a major source of concern even to the rice farmers themselves. Several state governments in the past have provided a number of rice farming communities with threshing machines which were considered inappropriate and largely inefficient and unproductive.

It is obvious that as farmers in the region respond to the fast evolving opportunities in both short and long grain rice markets, mechanised service providers would certainly emerge. With the South West rice market responding in this direction, it would be hard if not impossible for any farmer to absorb 3% grain loss talk less of 15-21% as currently being reported due to manual threshing and winnowing.

1. PROPCOM'S CATALYTIC ACTIVITY IN AG MECHANIZATION

The Department for International Development of the United Kingdom (DFID) funded Promoting Pro-Poor Opportunities in Commodity and Service Markets (PrOpCom) is an innovative program, designed to facilitate effectiveness and efficiency of the Nigerian commodity and service markets. The principal goal of the program is to improve Nigerian livelihoods through the facilitation of the economic growth of the local agro industrial commodities and service market, which perhaps is recognized as the largest source of livelihood for well over 65% of the economically active population of the country.

Though other livelihood development programs have focused mainly on providing human and material support in getting beneficiaries engaged in one trade or the other, the "Making Markets Work for the Poor" (M4P) approach is radically and substantially different in its approach. The M4P conceptual approach to economic growth focuses predominantly on the identification and isolation of the various organic or systemic bottlenecks within a trade or market and seeks to address them. The philosophy informing this is premised on the belief that once these issues are identified, isolated and addressed, the market is likely to function more efficiently, effectively and in a sustainable manner.

This development philosophical orientation, fits perfectly well with the overarching (DFID/Nigeria) goal of poverty reduction in Nigeria, and fully complements the Federal Government of Nigeria (FGN) NEEDS program. When all these socio-economic development orientations are conjoint, they fully support and work in the direction of the attainment of the United Nation's Millennium Development Goals (MDGs).

The UK- DFID PrOpCom going by its mandate is deploying the M4P socio-economic development paradigm in the executions of its program. In so doing, it is currently working to facilitate change in the South West Rice Commodity and Value Chain with the hope of demonstrating the effectiveness of the M4P development paradigm in poverty reduction. The choice of South West Rice in so doing is informed by its unique position in Nigerian society. Increasingly for the elite in the country, South West Rice plays an important role in celebrations and to some extent, it represents a sense of "being Nigerian." However the development and deepening of the chain is challenged by various issues. Recent studies have shown that there are a number of significant cost disadvantages in the local production and processing of this primary produce. This is particularly true of the cost of labour associated with the production and processing of rice in Nigeria, which tends to make the produce uncompetitive in the local and global markets.

Mechanized type of farming which is supposed to enhance productivity in Nigeria has being a source of major concern and financial losses because of the inappropriateness of tools, technology and of equipment being deployed. In effect, the development of "appropriate" tools and equipment has also been a favourite subject for development assistance.

However, the activities of such projects usually take place in government and university departments workshops and the resulting prototypes hardly get commercialized and when they do, it is done in such a way that tends not to favour mass production and distribution of such equipment.

According to the information provided in the ToR (), post-harvest losses of paddy are estimated at 15 percent of harvest and it is estimated that 24 percent of these occur during the threshing and cleaning stages. Considering the Nigerian rice industry, the use of threshing machines in substitution for traditional methods of rice threshing has been widely adopted in other regions over the years. Despite the degree of machine diffusion, little attention has yet been paid to low adoption of the piece of equipment in the South West where manual rice threshing seems quite predominant. A number of factors which may have nothing to do with the technological feasibility and or economic viability could be responsible for the low adoption of mechanized rice threshing technology in the region. The selection of an appropriate threshing method is a function of a

number of other factors, such as, rice production cycles, variety planted, labor availability and cost, weather condition at the point of harvest, availability and affordability of mechanical threshing machine and or services. Irrespective of the situation on ground, farmers can not afford to leave mature paddy on the field as this would certainly accelerate the processes of shattering resulting in immeasurable grain loss.

In effect, efficient and timely threshing operations are necessary particularly in locations known for farm labor shortage and high cost of labor such as in the South West Nigeria. It is clear that inappropriate threshing methods usually results in split and internally cracked grains leading to head rice losses, and of cause reduction in rice processors' profit margins.

This study was therefore undertaken to investigate the financial and socio-economic implications of manual rice threshing and other possible factors that could influence the adoption of mechanized rice threshing in the region.

2. BROAD AIM OF THIS ASSIGNMENT

The broad aim of this assignment was therefore to determine the adaptability of mechanical paddy threshing methods as a means of enhancing productivity and produce (rice paddy) quality in the South West Nigeria. This was however reduced to specific tasks as outlined below.

3 SPECIFIC OBJECTIVES AND TASKS

The specific objectives of this study included the following:

- Provide bases against which progress towards adopting manual-mechanized thresher can be pursued
- Collect data in specified areas of this assignment related to:
    - Economic activities and scale of rice producing households
    - Average number of productive plots
    - Average number of farmland
    - Total yield per hectare using manual threshing
    - Total loss to grain splitting and rice head breaks per hectare yield using manual threshing
    - Total cost of threshing yield/hectare
    - Total cost winnowing yield/hectare
    - Total labor requirement for threshing yield/hectare
    - Total labor requirement for winnowing yield/hectare
    - Average labor wage rate per day for threshing
    - Average labor wage rate per day for winnowing
    - Classification of labor and gender division
    - Time taken to thresh yield/hectare
    - Time taken to winnow yield/hectare
    - Socioeconomic factors and communication behavior that may influence the adoption of threshing machines
- Provide a basis of comparison between the different sites where catalytic activities are undertaken.

4. THE METHODOLOGY ADOPTED

In a study of this nature which requires time-series based information, one could not but limit our recruitment approach to that which was focused on a given set of stakeholders within a specified market and location. To this end, our executive interviewers who also doubled up as recruiters, recruited stakeholders with business relationship among themselves, and across the commodity/value chain of interest (the snowball recruitment or referral approach). The first step therefore entailed obtaining helpful information on the profile of the targeted respondents, information on the locations of operation (market), their trade groups and there from, respondents were randomly selected.

4.1 Sampling and Sample Size

A total of 78 rice farm households in four of the SW states (Lagos, Ogun, Osun and Ekiti) were surveyed. This was complemented with a survey of rice threshing service providers, the aim of which was to validate the information obtained from the farm households on their threshing processes and operations. A total of 52 artisanal and mechanised threshing/winnowing service providers were targeted, however, this figure could not be achieved due largely to the absence of these category of stakeholders at the time of the survey. Most of the service providers are from Benue State and they are popularly called "Agatu" locally. They are migratory farm labourers, who come to the South West and other parts of the country to get occupied when in their off farming seasons. Being farmers themselves, it is rather difficult identifying them talk-less of tracking them down. Perhaps, the best time for updating our knowledge and data on their activities and the services they provide could be during the next harvest season. However, a total of 31 respondents in this category were isolated and interviewed in Ekiti and Lagos states. Table 1 below is a summary of respondents surveyed across the various locations visited.

Table 1: Summary of Respondents Surveyed Across the Four Locations

Respondent Group	**Ekiti**	**Ogun**	**Osun**	**Lagos**	**Total**
	Respondents				
Targeted Farmers Household for Surveying	20	20	20	20	80
Actual Farmers Household Surveyed	19	20	19	20	78
Variance	1	0	1	0	2
Targeted Artisanal Threshing/Winnowing Providers	10	10	10	10	40
Actual Artisanal Threshing/Winnowing Providers	10	0	0	21	31
Variance	0	10	10	+11	9
Targeted Mech. Threshing/Winnowing Providers	5	5	5	5	20
Actual Mechanised Threshing/Winnowing Providers	0	0	0	0	0
Variance	5	5	5	5	20

4.2. Quality-Control Measures Adopted

The field activities of our executive recruiters/interviewers across all locations were back-checked physically, and at the point of editing as a number of questions were deliberately included in the questionnaire to back check the interview processes as well as the quality of the information volunteered. The purpose of our back checking was to ensure that the interviews took place with the right stakeholders and that the information volunteered were actionable. In all, a total of 20% of all interviews with respondents were back checked. Two levels of editing were also deployed and strictly implemented; field-level editing and post-field editing of survey instruments.

5 RICE THRESHING/WINNOWING PRACTICES IN SW NIGERIA

5.1 General Findings

Generally speaking, rice farming in SW Nigeria is carried out on small land holdings which in most cases, going by the outcome of our previous studies, are largely leased. While the degree of farmland holdings varies from state to state, there are indications that farmlands in most of these states are fragmented, largely because of the shifting cultivation habit of the farm households in the locations of interest.

5.2 Specific Findings

5.2.1 Respondents' Profile (Farm Household)

A total of 80 interviews were targeted, however and for reasons associated with the quality of information volunteered, two (2) farmers' questionnaires were discounted thus reducing the number of actionable questionnaires to 78, which represents 98% success rate. Tables 2 to 5 below present a profile of the respondents surveyed including gender, age distribution, number of years in operation, and the nature of their farm operations.

Table 2: Respondents' Gender

Gender	Ekiti	Ogun	Osun	Lagos
Male	84%	100%	63%	85%
Female	16%	0%	37%	15%

We see from Table 2 above, that males dominate rice cultivation operations, while women are predominantly involved in threshing and winnowing. This is not to say that some women are not also involved in rice cultivation. This trend is consistent across the entire region. In effect, the introduction of mechanized threshing could certainly go a long way in reducing the drudgery associated with manual threshing and winnowing, thus freeing up valuable time for other possible commercial or social activities. Going by our observations, most of the responses relating to threshing and winnowing were volunteered by the female household members, thus implying their dominance in this aspect of rice production.

Table 3: Respondents' Age Distribution

Age Range	Region	Ekiti	Ogun	Osun	Lagos
20 - 25	1%	0%	5%	0%	0%
26 - 35	23%	5%	25%	42%	20%
36 - 40	10%	5%	25%	11%	0%
41 - 45	14%	11%	5%	21%	20%
46 - 50	24%	47%	15%	11%	25%
51 and above	27%	32%	25%	16%	35%

Table 3 above, generally shows an aging workforce, a trend which is also observable across the locations surveyed. Generally speaking, farmers between the age ranges of 46 – 50 and 50+ combined constitute 51% of total respondents. Farmers between the age ranges of 36 – 40 and 41 – 45 combined, constitute 24% of respondents and farmers between the age ranges of 20 – 25 and 26 – 35 combined, also constitute a total of 24% of respondents surveyed. A cursory look across specific locations reveals that in Lagos and Ekiti states, approximately 80% of farmers are aged 41 years and over.

While Lagos has ample commercial opportunities for the young, Ogun and Osun States provide limited livelihood opportunities besides farming. In effect, the respondents (members of the household) are not just farmers but also engage in other livelihood opportunities including transportation. Also, it was observed that most of the information volunteered were present by younger members of the household, where farming is a major source of livelihood.

Table 4: Respondents' Experience in Farming Operations

Farming Experience	Region	Ekiti	Ogun	Osun	Lagos
1 - 5 years	9%	0%	10%	5%	20%
6 - 10years	13%	0%	20%	11%	20%
11 - 15years	9%	11%	5%	16%	5%
16 - 20years	26%	42%	15%	42%	5%
20+ years	44%	47%	50%	26%	50%

Table 4 above also reveals that about 80% of the farmers have been in operation for over 10 years, and this is in consonance with their age ranges as shown in the preceding table. Also, this trend is noticeable across all the SW rice producing states.

Table 5: Farmers' Literacy Level

Education	Region	Ekiti	Ogun	Osun	Lagos	Male	Female
Primary	50%	42%	90%	32%	35%	55%	23%
Secondary	28%	32%	10%	47%	25%	29%	23%
Higher Education	4%	5%	0%	5%	5%	3%	8%
No Formal Education	18%	21%	0%	16%	35%	12%	46%

Table 5 above generally presents a picture of respondents with limited formal education. For instance, while 50% of respondents generally have primary education as the highest level of education attained, while 18% have no formal education , . When this information is analysed across gender, it becomes apparent that the greater percentage of females (46%) have no formal education while 23% have primary education as the highest level of education attained.

Primary education, basically enables one to communicate (read and write) but were not able to understand statistics issues, thereby necessitating the need for obtaining primary production information in manners which they understand and we thereafter standardizing such information for the purpose of analysis.

Table 6: Nature of Farm Operations

Nature of Operation	Region	Ekiti	Ogun	Osun	Lagos
Manual	96%	84%	100%	100%	100%
Both	4%	16%	0%	0%	0%

Table 6 above reveals that farming operations in SW Nigeria, is generally manual in nature with 96% of respondents engaged in this practice. Interestingly, all respondents in three of the four locations surveyed are engaged in this practice which involves the use of both feet.

5.2 Economic Activities and Scale of Rice Producing Households

Based on our findings, economic activities within the locations begin with land preparation from February to March, while sowing activities are carried out in April/May and harvesting is done in August and September. Rice harvesting is generally a manual operation using hands, without the use of sickle or knife, while threshing is mainly achieved by means of both foot. Winnowing on the other hand is carried out using water and air as the only mechanisms while par-boiling, drying and milling are dominated by females across all the states. Marketing of their produce is dominated by middlemen from various locations.

There is no doubt that in terms of scale of operations, rice farming in SW Nigeria is carried out on a small scale as shown in Table 7 below, with the average size of farmland being **1.3** Ha. Given the manual nature of rice production and threshing operations within this region, this comes as no surprise because farming operations would largely be limited to a manageable scale in terms of human resources availability, capacity and access to market. The South West rice farmers are still subsistence producers, still practising the traditional shifting cultivation farming systems. This we consider retrogression as farmers in the region have a history of commercial arable crop farming, which was sustained though by government owned commodity boards, which provided access to agronomic input and output markets. The dissolution of these commodity boards without thinking through a private sector led replacement systems largely contributed to the absence and near collapse of the service markets, which is the engine fro propelling a viable and sustainable commodity market e.g. bulking agents. This is perhaps the reason why there is a disparity between the number of accessible farmlands and those currently in operation. Shifting cultivation systems and manual farming operations in the South West are largely indicative of an almost inexistence service market, which is largely driven by the disorganised local commodity market, where marginal trading rather than volume is the order of the day., thus the inefficiencies associated with most non export commodities markets in the region.

Table 7: Landholding and Utilisation

Indices	**Period**	**Location**				
		Region	Ekiti	Ogun	Osun	Lagos
Av. number of farmland accessible to household in hectares	2006					
	2007					
	2008	3.9	2.6	6	2.3	6.6
Av. size of productive farmland in Hectares	2006					
	2007					
	2008	3.1	3.5	3.2	2.6	3.0
Av. number of farmland cultivated in hectares	2006					
	2007					
	2008	2	2	3	2	3
Total area cultivated in hectares	2006	3.50	2.92	2.39	2.83	5.75
	2007	3.51	3.06	2.39	2.93	5.55
	2008	3.60	2.87	2.39	2.69	6.30

5.2.1 Av. Number of Rice Farms Accessible To Household

Deducing from the information presented in Table 7 above, it is obvious that a significant number of the farmland accessible to the household were under cultivation during the last planting season across all the locations of interest. On the average, the farmers' household appears to have access to four farmlands across the state, while about 2 are usually in operation. From our

knowledge of the industry and based on the outcome of similar previous studies conducted by RBS for and on behalf of PrOpCom, it was observed that most of the land in the region are leased and highly disaggregated in nature. This in part could be attributed to the fact that farmers hardly have access to modern agronomic input and as such have resorted to bush fallowing/shifting cultivation farming systems.

Generally, long grain rice cultivation seems not quite common in the South West, except in situations where they are grown under contract for a major buyer. In Ekiti and Osun states, we came across a couple of them with about 10-20 hectares, which are quite significant in size of operations. However, we were unable to reflect the information volunteered for the purpose of this report, because they were less than one percent of the sample size and with significant implication for data distortion.

Table 8: Type of Rice Cultivated in SW Region

	Ekiti	Ogun	Osun	Lagos
Long Grain	21%	0%	11%	5%
Medium Grain	0%	0%	5%	0%
Short Grain	79%	100%	95%	100%

Short grain rice appears to be quite common in the South West mainly because of the commercial opportunities its market provides, most short grain rice are considered Ofada rice, which enjoys a nitch market that is largely patronised by the urban elite. As an example, a kilogram of typical short grain rice goes for as high as N150 per kilo while the long grain is about N55 per kilogram. These not withstanding, the incentives for long grain rice production is its access to a structured commodity market, which is largely driven by industrial consumers as well as organised private sector led services market. Though the price incentive per kilo is weaker for long grain rice (about 33% of short grain rice), this in most cases is usually compensated for by its higher yield per hectare (3.5mt – 6mt), with the right inputs and support. There is no doubt whatsoever that farmers will respond to such opportunities so long as the market for such grain exist (Veetee Rice Limited and Plenteous Rice Limited). This can promote the movement away from the cultivation of short grain to cultivation of long grain rice.

5.2.2 Av. Size of Productive Farmland, Number of Farmland Cultivated

Talking in terms of average number of productive fields, Table 7 above indicates that on the average, each of the farm household in SW Nigeria had access to three productive fields in 2008 cropping season, but cultivated only two. On the average, it is estimated that the average size of a typical rice field within the region measures about 1.3 hectares.

Table 9 Per Hectare Yield, Labor Input and Cost Analysis Using Manual Threshing

Indices	Period	Location				
		Region	Ekiti	Ogun	Osun	Lagos
Av. yield of paddy rice (short-grain) per hectare before threshing (Mt)	2006	1.80	3.02	*0.73	2.04	1.27
	2007	1.68	2.53	*0.73	2.07	1.20
	2008	1.61	2.39	*0.73	1.88	1.27
Av. % grain loss due to threshing & winnowing	2006	15	21	3	21	6
	2007	13	20	3	15	6
	2008	12	18	3	15	7
Av. yield of paddy rice per hectare after threshing (Mt)	2006	1.57	2.5	*0.71	1.68	1.2
	2007	1.49	2.11	*0.71	1.8	1.13
	2008	1.44	2.03	*0.71	1.64	1.19
Av. Man-days required in threshing all farmland	2006	23	19	14	26	15
	2007	21	21	9	21	16
	2008	21	20	9	21	18
Av. Man-days required in threshing a Mt of paddy rice	2006	4	3	9	5	2
	2007	4	3	5	4	3
	2008	4	3	6	5	2
Av. Man-days required in threshing an hectare of rice	2006	7	7	6	9	3
	2007	6	7	4	7	3
	2008	6	7	4	8	3
Av. wage rate per man-day for threshing (N)	2006	1,057	2,011	563	1,307	719
	2007	1,202	2,236	621	1,347	798
	2008	1,192	2,212	682	1,383	830
Av Cost of Threshing per MT	2006	4,228	6,033	5,067	6,535	1,438
	2007	4,808	6,708	3,105	5,388	2,394
	2008	4,768	6,636	4,092	6,915	1,660
Av. cost of threshing a hectare of rice (N)	2006	7,070	13,217	3,378	11,857	1,830
	2007	7,351	15,097	2,484	9,467	2,372
	2008	7,074	15,151	2,696	10,876	2,325

*We noticed that Ogun yield over the years are identical, but that is what we got after analysis. Although we are not too surprised about the figure coming out of the area because most farmers are under massive pressure to sell off their land to the estate developers.

5.2.3 Av. Yield of Paddy Rice (Short-Grain) Per Hectare Before Threshing (Mt)

Tables 9 above presents the yield per hectare using the traditional manual approach to paddy rice threshing for the short-grain variety. Again, the average yield per hectare for this variety in the SW rice producing states varied minimally through the years under study (2006 to 2008). Going through Table 9 above, it is obvious that the yield per hectare of the short grain rice being the

most common planted, was about 1.8 Mt in 2006, 1.68 in 2007 and 1.61 in 2008. You may wish to see paragraph one of Table 9 above for additional details. Kindly note that the figures presented under these headings were calculated from the historical record of losses incurred as a result of manual threshing and winnowing and the actual yield there from as provided by the farmers themselves. You would have observed from the data above that the yield from Ekiti and Osun are higher than that of Ogun and Lagos States, this is largely because there are government intervention in both Ekiti and Osun States and they have access to agro chemicals and fertilizers and a fairly reasonable input and service market. While those in Ogun state have no access to such inputs and more so they are under pressure to sell off their lands, their lands are being turned into residential areas by the government. Although, their cultivation of rice is very low, but due to their proximity to the city (Lagos), they tend to earn more from their sales.

5.2.4 Av. % Grain Loss Due To Threshing & Winnowing

Talking about grain loss due to threshing and winnowing methods, farm households across the region of interest reported 15%, 13% and 12% in 2006, 2007 and 2008 respectively. Since most of their threshing and winnowing operations are done manually, one cannot but attribute some of these losses to their manual mode of operations. It is also not unlikely that some of these losses could be due to shattering as a result of long storage. Kindly see paragraph two of Table 9 above. As you would have observed the yield loss in Ogun stood at 3% all through the years that was what was given to us. Although rice cultivation is not a major thing for them as it used to be.

5.2.5 Av. Yield of Paddy Rice Per Hectare After Threshing (Mt)

In this report, the yield per hectare after threshing, takes into account the discounting of losses incurred as a result of threshing and winnowing. Table 9 above provides reasonable insights on this subject. Though we did not follow up by asking what farmers would have done with these losses, we would want to belief that some of these grains would be further processed and consumed by the household members or fed to their livestocks. There is also a tendency of the broken grains being further processed and sold at a discount in the open market. Paddy rice yield per hectare in the region of focus were reported as 1.57, 1.49, and 1.44 Mt in 2006, 2007, and 2008 respectively.

5.2.6 Av. Man-Days Required In Threshing A Mt and A Hectare of Paddy Rice

Across the region of focus, threshing seems largely a manual operation, as respondents claimed not to have access to mechanized threshing services. In effect, farmers, particularly those in Ogun, Osun, and Ekiti States tend to depend largely on migrant laborers in threshing their fields. Generally speaking, farmers claimed that they required 4 man-days to thresh a Mt of paddy rice in the years 2006, 2007 and 2008, while within the same period, 7, 6, and 6 man-days were reported as being required to thresh a hectare of rice field. Kindly see Table 9 above for additional details

5.2.7 Av. Daily Rate For Threshing A Mt of Paddy Rice and A Hectare of Rice Field (N)

The average labor rates within the states appear to be quite diverse, with Ekiti State reporting the highest rate within the region. It is not clear what could be responsible for this. However, from the data so far collated and from some of the qualitative information obtained while on the field, one cannot but assume that the high dependence on migrant labor from adjoining states could be responsible for this. Ekiti and Osun state are both acknowledge as major rice production centres within the region. However most of their threshing and winnowing services just as it applied in other locations across the region, are paid for based on volumetric outputs (kerosene tin popularly

known as garawa, weighing on the average 10kg and with farmers paying as much as N120 to thresh and winnow such measurement). Similar trends were observed in other locations, but at a lower rate. Generally, it cost N1,057, N1,202 and N1,192 to thresh a Mt of paddy rice in 2006, 2007 and 2008 respectively across the region. These translate into N7,070, N7,351 and N7,074 to thresh a hectare of rice field in 2006, 2007 and 2008 respectively. You may wish to see Table 9 above for further information on the details of the various locations visited.

Tables 10 below, focuses on the per hectare labor requirement, for winnowing and its cost implications. The indices listed in the table are also discussed below.

Table 10 Total Labour Requirement and Cost of Winnowing Yield/Hectare

Indices	Period	Location				
		Region	Ekiti	Ogun	Osun	Lagos
Av. total area cultivated by households in hectares	2006	3.50	2.92	2.39	2.83	5.75
	2007	3.51	3.06	2.39	2.93	5.55
	2008	3.60	2.87	2.39	2.69	6.30
Av. Man-days required in winnowing cultivated rice farm	2006	21	30	15	20	9
	2007	21	30	15	19	9
	2008	22	31	16	23	9
Av. Man-days required in winnowing a Mt of paddy rice	2006	4	4	9	4	1
	2007	4	5	9	4	1
	2008	4	5	9	5	1
Av. Man-days required in winnowing an hectare of rice	2006	6	10	6	7	2
	2007	6	10	6	6	2
	2008	6	11	7	8	1
Av. cost of winnowing a hectare of rice (N)	2006	5,779	28,337	5,248	10,733	1,401
	2007	5,755	27,626	5,362	9,512	1,580
	2008	6,165	30,068	5,998	12,686	1,493
Av. wage rate per man-day for winnowing (N)	2006	943	2,728	854	1,500	881
	2007	972	2,809	873	1,500	963
	2008	989	2,800	913	1,500	1,006
Time taken to thresh yield per hectare	2006	N/A	N/A	N/A	N/A	N/A
	2007	N/A	N/A	N/A	N/A	N/A
	2008	N/A	N/A	N/A	N/A	N/A
Time taken to winnow yield per hectare in hours	2006	N/A	N/A	N/A	N/A	N/A
	2007	N/A	N/A	N/A	N/A	N/A
	2008	N/A	N/A	N/A	N/A	N/A

5.2.8 Av. Man-Days Required In Winnowing A Mt and A Hectare of Paddy Rice

The labor required to manually winnow a hectare of paddy rice as reported by respondents in the locations of interest is 6 man-days, while they reported that they required 4 man-days to manually winnow a Mt of paddy rice. The reason for the disparity between Ekiti and Lagos States can be seen on Table 9 as the yield in Ekiti is higher than that of Lagos and people are paid by the number of output. The man-days is productivity based

5.2.9 Av. Wage Rate Per Day and Cost of Winnowing a Hectare of Rice (N)

The reported average wage rate per day to manually winnow paddy rice was N943, N972 and N989 for 2006, 2007 and 2008 respectively, while it was reported that they used N5,779, N5,755 and N6,165 in 2006, 2007 and 2008 respectively. It can also be observed that the figure from Ekiti and Osun States are still very high as reported in the threshing part earlier, and it is difficult to rationalize the reason for this.

5.2.10 Time Taken To Thresh and Winnow Yield Per Hectare

Though we tried obtaining information on this, the information volunteered by the respondents was not helpful and could not be standardized.

5.2.11 Socio-economic Factors Likely to Influence Mechanised Threshing Adoption

There are several social and economic reasons why rice farmers continue to engage the services of household members and commercial artisanal service providers in harvesting, threshing and winnowing paddy rice. In carrying out this assignment, we engaged the use of prompting questions (Q.20) in surfacing socio-economic reasons informing the extensive engagement of manual threshing/winnowing instead of the mechanised approach. The two Tables below provide an insight into the response obtained.

Table 11 Prompted questions on socio-economic factors in informing manual threshing

Responses	Region	Ekiti	Ogun	Osun	Lagos
Low cost of labour	22%	5%	0%	0%	80%
Abundance of labour	17%	0%	0%	0%	65%
Subsistence farming operations	5%	0%	0%	0%	5%
In availability of threshing machine	29%	11%	35%	0%	70%
High cost of mechanised thresher	14%	0%	20%	0%	35%
Harvesting culture	22%	1%	0%	0%	8%
In availability of mechanised threshing service provider	14%	0%	5%	0%	50%

Based on the responses to our prompted questions, it is clear that low cost of labour and abundance of labour seems to be the reason for high dependence on manual threshing in Lagos State. The reason for these is the remoteness of the locations where rice is cultivated in the state. Most of these locations are islands accessible by boats only and with little or no other means of livelihood except farming. In effect, one can understand why labour is cheap and in abundance in such locations in the state. Apart from this, it is equally clear that the in availability of threshing machines as well as service providers also goes a long way in promoting and sustaining the high dependence on manual threshing. Analysed data from other states are largely at variance with those from Lagos State and as stated earlier, these again are quite understandable.

Table 12 Spontaneous responses on socio-economic factors informing manual threshing

Responses	Region	Ekiti	Ogun	Osun	Lagos
In availability of threshing machine	62%	68%	60%	68%	50%
Lack of awareness of threshing machine	4%	5%	0%	11%	0%

It is part of their culture	9%	11%	15%	5%	5%
Machine damages the grains	1%	0%	0%	0%	1%
Manual threshing is cheaper	3%	0%	0%	5%	5%
No space for such operation	3%	0%	0%	0%	10%

However, when respondents were asked to provide clarity on the reasons informing their responses, it became clear that the underlying socio-economic factors in forming their continuous dependence on manual threshing were largely informed by the in availability of mechanised threshing machines and or service providers. It is obvious from the data provided on Table below that awareness seem a non issue across the region. In effect, all that needs to be done is to initiate a process that of commercial paddy rice production, thereby stimulating the emergence of mechanised threshing services market within the region of interest. One is of the opinion that such process has indeed commenced with the commercial opportunities being provided by Ofada Veetee Rice Limited in the production of long grain paddy rice. Hopefully, farmers would eventually respond to these opportunities. It certainly would be extremely difficulty to thereafter rationalise manual threshing in situations when paddy rice yield per hectare could be as high as 3.5-4mt.

Table13 Prompted responses on socio-economic factors informing manual winnowing

Responses	**Region**	**Ekiti**	**Ogun**	**Osun**	**Lagos**
Low cost of labour	22%	5%	5%	16%	60%
Abundance of labour	18%	5%	0%	11%	55%
Subsistence farming operations	10%	0%	0%	16%	25%
Inavailability of winnowing machine	28%	5%	25%	16%	65%
High cost of mechanised winnowing	18%	0%	20%	11%	40%
Harvesting culture	17%	0%	0%	16%	50%
Inavailability of mech winnowing service provider	5%	0%	0%	0%	20%

Table 14 Spontaneous responses on socio-economic factors informing manual winnowing

Responses	**Region**	**Ekiti**	**Ogun**	**Osun**	**Lagos**
Inavailability of winnowing machine	46%	58%	65%	21%	40%
Lack of awareness of winnowing machine	4%	5%	0%	11%	0%
Lack of money	13%	0%	15%	0%	35%
It is faster	3%	0%	0%	0%	10%
Causes no damage to the seeds	1%	0%	0%	0%	5%
Low productivity	1%	0%	5%	0%	0%
Part of their culture	3%	0%	5%	0%	5%
High cost of winnowing	4%	0%	5%	0%	10%
Wastage	1%	0%	0%	0%	5%
Manual winnowing is cheaper	1%	0%	0%	0%	5%

Tables 13 and 14 above present similar scenarios as mentioned in section 5.2.11 on the previous page.

Finally, the more portable a threshing machine is, the more likely the possibility of its being embraced by rice farmers. If such machines can also be mobile, so that the distance between production and processing centres is substantially reduced, this would go a long way in encouraging the adoption of mechanisation by the SW rice producing states.

6. OBSERVATIONS AND DISCUSSIONS

6.1 Respondents' Profile

As you would have observed in section 5 above, majority of the farmers are male of advanced age and with limited education. It is quite an issue how long the economy can continue to depend on this group of producers as its main source of food and raw materials for its industry. The fact that the farming population consists mainly of the aged and aging certainly points in a direction of farm labour scarcity and its attendant high cost, which basically erodes the profit margin of farm families. The fact that labour is becoming scarce and expensive makes a case for the introduction of mechanised threshing devices within the region of interest. There is likely to be growing demands for long grain rice in commercial quantity, and it would be difficult understanding how manual threshing, considering the current high cost of labour, could make the market attractive to farmers.

6.2 Farmland Accessibility, Size of Productive Fields, Number Cultivated, etc.

Talking in terms of accessibility to farm lands, it is obvious from the data present on Table 7 and the cross tabulation report, that the farm household has access to limited area of land for cultivation. This apart, a significant size of the available fields are in fallow due largely to the inaccessibility and affordability of modern agricultural inputs such as fertilizer and other agro chemicals. Experience has shown that even when available, there are issues of quality and standard of what is available in the market. Over the years, farmers have lost confidence in the farm input market and have resorted to the traditional bush fallow and shifting cultivation farming systems. It would be quite difficult mechanizing fallow land, as stumping and clearing of such land would be required if they were to be put into mechanised farming. In effect, we are of the opinion that it is the fields that are cultivated in the technical sense, that are available to farmers for cultivation, as the others are in fallow. This and several market related reasons like access to market, inputs, etc are perhaps responsible for the rather small and subsistence farm holdings, which are manually operated, a trend that appears to be the culture of the industry.

6.3 Paddy Yield/Hectare, Percent Losses Due to Threshing, etc.

It was observed that short-grain upland rice appears to be the most popular type of grain cultivated in the entire South West. Yield from some of the variety planted are generally low when compared with low land long-grain rice like Nerika 1, Nerika 2, Faro 54 and 55 among several others. The choice of cultivating short grain rice is largely market driven as it commands better prices even more than the imported long grain rice (which is twice the price of imported long grain). These notwithstanding, one must acknowledge that an average yield of 1.3 Mt per hectare is not comparable to 4 Mt per hectare being reported by some farmers within the region planting long grains under contract. With most of the farmers planting short-grain and threshing manually, grain losses ranging between 3% and 21% were reported across the region. Though Ogun State reported the lowest grain loss figure of 3%, we are certainly at odd on what could be responsible for this unusually low figure, especially when one takes into consideration, the fact that manual threshing approaches (By walking briskly and using their feet to squeeze out the grains) across the region are basically the same. For the purpose of this report, it would not be out of place to report 15% grain loss due to grain breakages and being blown away with the chaff while winnowing, which is quite significant in a situation where crop yield per hectare is perhaps un-encouraging. Taking into account grain loss, high cost and unavailable labour the case for the introduction of mechanical threshing devices cannot be better justified.

Table 15 Per Hectare Short Grain Rice Production Budget

Operations	2005	As %of Total Cost	2006	As %of Total Cost	2007	As %of Total Cost
Land Preparation (Manual)						
Land Clearing (Hired Labor)	7,241.00	8.42	8,281.04	8.80	7,145.20	7.26
Land Clearing (Family Labor Estimate)	1,241.50	1.44	1,408.34	1.50	1,404.67	1.43
Cost of labor transportation	741.96	0.86	839.57	0.89	919.13	0.93
Sub Total	9,224.46	10.72	10,528.95	11.19	9,469.00	9.63
Planting						
Seed Procurement	7,816.22	9.08	9,291.07	9.88	9,137.96	9.29
Seed handling and transportation	96.47	0.11	123.82	0.13	129.41	0.13
Seeding (labor)	3,529.50	4.10	3,851.81	4.09	4,221.19	4.29
Transportation of labor	741.96	0.86	839.57	0.89	919.13	0.93
Sub Total	12,184.15	14.16	14,106.27	14.99	14,407.69	14.65
Fertilizer Application at Planting						
Fertilizer Procurement	4,512.16	5.24	4,481.82	4.76	5,194.66	5.28
Fertilizer Handling & Transport	171.18	0.20	224.12	0.24	327.06	0.33
Labor for Application	650	0.76	704.17	0.75	716.67	0.73
Sub Total	5,333.34	6.20	5,410.11	5.75	6,238.39	6.34
Herbicide Application at Planting						
Herbicide Procurement	416.27	0.48	457.22	0.49	392.48	0.40
Herbicide Handling & Transport	90	0.10	160	0.17	87.35	0.09
Labor for Application	325	0.38	352.09	0.37	358.34	0.36
Sub Total	831.27	0.97	969.3	1.03	838.17	0.85
Field Maintenance						
Manual Weeding Labor	6,116.50	7.11	6,414.99	6.82	6,880.03	6.99
Sub Total	6,116.50	7.11	6,414.99	6.82	6,880.03	6.99
Pest Control						
Bird Scaring Labor (Family estimate)	25,597.00	29.75	27,328.84	29.05	28,724.13	29.20
Bird Scaring Material	1,571.00	1.83	1,571.00	1.67	1,571.00	1.60
Rodent Control Labor	4,972.50	5.78	5,386.90	5.73	5,482.53	5.57
Rodent Control Materials	2,065.90	2.40	2,065.90	2.20	2,065.90	2.10
Sub Total	34,206.40	39.76	36,352.64	38.64	37,843.56	38.47
Harvesting						
Labor for Harvesting	3,858.85	4.48	3,906.53	4.15	4,170.57	4.24
Labor for Threshing Field (Hired)	3,948.60	4.59	4,312.70	4.58	4,043.05	4.11
Labor for Threshing Field (Family)	2,786.69	3.24	2,757.30	2.93	3,307.95	3.36
Labor for Winnowing (Hired)	1,345.79	1.56	2,484.97	2.64	2,302.00	2.34
Labor for Winnowing (Family)	2,534.71	2.95	3,294.03	3.50	3,453.00	3.51
Cost of storage fumigant	488	0.57	510	0.54	634	0.64
Cost of Transporting Laborers	721.67	0.84	830	0.88	869	0.88
Cost of Transporting Harvests to Barn	940.5	1.09	999.06	1.06	1,101.54	1.12
Cost of Transporting Storage Materials	292.65	0.34	273.24	0.29	521.18	0.53
Rental or Depreciation Barn	1,227.77	1.43	1,483.33	1.58	1,675.00	1.70
Sub Total	18,145.23	21.09	20,300.67	21.58	22,696.07	23.07
Total Production Cost Per Hectare	86,041.35	100.00	94,082.93	100.00	98,372.91	100.00

Table 15 above represents the average hectare budget for the production of short grain rice across the region. The information was obtained from the production and processing cost study, which we conducted in 2007. we believe that the information obtained then, are still relevant now as most of the circumstances that informed the generation of such data are still obtainable now. Since our previous study did not focus on long grain rice, which in anyway are hardly cultivated in this part of the country, one may not be in the best position as at now to compare the production figures and per hectare margin between long grain rice and short grain rice in the region. Besides, the farming systems engaged in the local production of short grain rice could make this produce pass as an organic commodity. It is clear going by our experience that long grain rice can not be produced commercially under the same systems. Therefore, we are likely to be comparing two commodities that are not similar in terms of production systems and in fact outputs. Also, it might not be possible at this point to empirically compare the two systems of threshing and winnowing, even in the case of short grain rice talk-less of the long grain rice. The reason being the near absence of mechanised threshing and winnowing services market in the location of interest and the absence of data on such operations.

Be that as it may, one needs not look further to justify the need for mechanisation of the two operations of interest. In other locations of the country where rice is grown even on subsistence level, it has been shown that the mechanisation of threshing and winnowing has to a large extent being responsible for reduction in grain loss and has significantly improved paddy rice production efficiency and production cost effectiveness. Similarly, it is not that local farmers are not interested in threshing their paddy rice mechanically, but the near absence of such machines and or service providers seems to be the major constraints in so doing. As you could see from Table 15 above, threshing and winnowing accounts for 12.24%, 13.65% and 13.32% of the hectare production cost of typical short grain rice. This cost item can be significantly reduced if mechanised threshing services were made available in most of the production centres across the region. We are convinced that we the introduction of long grain rice production across the region, the market for mechanised threshing services would emerge as the volume of rice production per hectare is likely to triple what is currently obtainable with the short grain rice.

6.4 Threshing Labor Requirement, Cost Implication by Mt and by Hectare

As mentioned in the paragraph above, labour is gradually becoming scarce and expensive. For example, it was observed that it cost about N7,000 threshing a hectare of rice field and N4,912 to thresh a Mt of paddy rice. These are unacceptably high costs of production, which could be significantly reduced by mechanising threshing operations. Though this is likely to have some implications for farm labour employment, however, such labours are becoming scarce, expensive and difficult to recruit when needed. (Ekiti and Osun states depend on migrant labour for this operation).

6.5 Winnowing Labor Requirement, Cost Implication by Mt & Hectare

In the case of winnowing, the situations are similar to those reported in Section 6.4 above. Specifically, it cost about N6,165 winnowing a hectare of rice field and N4,281 to winnow a Mt of paddy rice. Again, these are unacceptably high costs of production, which could be significantly reduced by mechanising winnowing operations especially in Ekiti and Osun states, which depend largely on migrant labor for this operation.

6.6 Time Taken for Threshing and Winnowing

We tried getting information on this subject, but the information obtained was not useful, and such could not be reported. The information was challenged by several issues relating to standardization which we tried to correct, but found to be quite hectic. We believe that when provided, such information would largely be un-actionable, thus the need to focus largely on per hectare and per Mt production cost figures.

6.7 Conclusions

Finally, farm household members constitute a proportion of the labour engaged in paddy rice threshing and winnowing within this region while the mode of threshing and winnowing is largely manual. There are also a number of individuals who offer manual rice threshing/winnowing services on or about harvest season, which is usually around the months of August and September. Gleaning (secondary harvesting of field) is usually done around November and December with the same individuals providing this service. Manual threshing and winnowing appears to be the most common threshing approach because of a number of factors. Absence and lack of access to mechanical threshing and winnowing devices seems to be the major reason to this kind of operation. In locations after locations, farmers' household claimed not to have even seen a threshing machine talk-less of access to it or its services. It is not that local authorities are not unmindful of the need to facilitate mechanised threshing services across the region; some attempts have been made, but have largely been met with technological failures. For example in Ise, Lekki LGA, Lagos State, farmers claimed that the state government attempted mobile and static mechanised threshing services but this was largely a failure because of the inefficiency (breakages of grains, grinding of the grains, chaffs and panicles, separation challenges) associated with the use of the machine and the great paddy loss incurred there from. Respondents mentioned that these challenges were noted the first day the machine was introduced. There is nothing to suggest that this issue had been rectified as none of the farmers met in that area ever claimed to have engaged the services of mechanised service providers. It is not unlikely that the state government under its Rice for Employment Programme may have found a way out of this dilemma; such services are largely restricted to the beneficiaries of the programme and largely inaccessible to private farmers in the location visited. From an earlier interaction with the leadership of Rice for Employment Programme, it was observed that all mechanised farming services provided under this programme were state led, highly subsidised and practically inaccessible to an ordinary rice farmers in the state. The need for the emergence of mechanised rice threshing services that is private sector led can not at this stage be over emphasised as the Lagos State Rice for Employment Programme is likely to suffer the same fate other state sponsored commercial projects have experienced.

While manual paddy rice threshing within the SW region may have its roots in historical and traditional practices, the laborious, tiring, time consuming and costly nature of manual rice threshing is a major source of concern even to the rice farmers themselves. They are therefore quite receptive to the idea of mechanised threshing provided the machine is suitable to their operations. It is in the light of this that it might be necessary to consider a threshing machine that is multi purpose in nature (capability of threshing various types of rice grains after proper calibration) and that can be powered by different sources of energy including manual. This suggestion arose as a result of a growing demand and pressure on long grain rice for processing to feed the urban market in the South West.

7. ISSUES ARISING AND SUGGESTED WAYS FORWARD

7.1 Awareness

Most of the respondents interviewed were not aware of mechanized threshing machine. In some cases, their experience has been a sad one (Ise, Lekki LGA, Lagos State). What people are not aware of they can hardly invest on talk-less of use. Therefore, there is a need for a creative approach of sensitising and creating awareness within the rice farming communities on what technology is available in the market and how well it could serve their needs, especially when it comes to cost savings.

Suggested Ways Forward

A proper awareness campaign is being suggested as a means of educating farmers within the region on the benefits of mechanized threshing methods. An innovative approach to this is by working with manufacturers of the various but appropriate rice threshing and winnowing machine in organising a trade fair/campaign on threshing/winnowing machines in appropriate rice growing communities across the region. In addition to this, product demonstrations relating to uses, maintenance, procurement and follow-up services could be video recorded and mass produced by machine vendors for distribution to farmers. Better still, there could also be an option where by the machine of choice could be made available on long term lease through community based financial service providers. In this wise, there might be need to look further into the possibility on interest draw back on farm machinery procurement of this nature.

7.2 Cost Implication

The issue of cost is quite important because in some of the states visited, Lagos and Ogun States precisely, the cost of threshing is quite cheap because farmers depend largely on family labour which are largely under costed. But this has not removed the inefficiency and drudgery associated with manual threshing and winnowing. Sincerely speaking, farmers depending on such systems are likely to find themselves uncompetitive in an emerging highly competitive South West rice market.

Suggested Ways Forward

In effect, is suggested that our suggested ways forward in Section 7.1 be repeated here

7.3 Technological Appropriateness of Threshing Machine

State governments in the past have provided a number of rice farming communities with threshing machines, which were considered inappropriate and largely inefficient and unproductive. The experience of farmers in Ise Lekki LGA, Lagos State is a pointer in this direction. Some of these sad experiences, which may not be necessarily associated with rice, but other commodities, tend to discourage farmers and potential investors in locally fabricated and or manufactured farm machineries. In effect, what is to be introduced to farmers should be tried, tested and proven machineries, which are adaptable to the peculiarities of the locations where they are to be deployed.

Suggested Ways Forward

We are not particularly sure how far the programme has gone in isolating thresher, which could be used or adapted in the South West. These notwithstanding, permits us to suggest the need to conduct a comprehensive survey of what is available within the Nigeria market, their technological appropriateness, ease of maintenance and access to spare parts, ease of calibration for use in threshing various grain types, availability and affordability among several others. Perhaps it is only manufacturers and or distributors that could scale through these parameters that should be

considered for collaboration. In essence, there is a need for the programme to be extremely mindful of machineries they are introducing to the farmers in replacement to their traditional methods of threshing. One false step along this line could prove negatively expensive for the image of the programme, and this should be avoided at all cost.

7.4 Aging Farm Labor and the Attendant Shortages

From the analysis of the information obtained, it is quite obvious that manual threshing cannot sustain rice production in the South West, considering the fact that farmers are aging and are currently depending on migrant to provide these services. As we can see from the study most of the farmers are dependent on migrant labour with little on family labour which cuts across all the states. Taking into consideration the present high demand for long grain paddy rice processing in the South West, the need to conserve the limited foreign exchange available to the nation through import substitution, the time for the introduction of mechanised threshing in the region cannot be better appropriate.

Suggested Ways Forward

From the information at our disposal, it is clear that rice threshing has been mechanised in the other parts of the federation where there are lesser market opportunities. It is suggested that the successful machines tried and tested elsewhere be introduced and modified to suit the peculiarities and challenges in the South West.

7.5 Absence of Mechanized Threshing Service Providers

The absence of mechanised threshing services is perhaps a function of a limited market and the quantum of their produce. It is obvious that as farmers in the region respond to fast evolving opportunities in both short and long grain rice markets, mechanised service providers would certainly emerge. One of the reasons why this has not happened is because farmers make so much income on margin rather than volume, and this scenario is likely to change in the coming years as rice processors respond to market and government incentives. With a lot of work being done on the South West rice market, there are indications that emphasis would shift to productivity, quality and scale of operations. With the South West rice market responding in this direction, it would be hard if not impossible, for any farmer to absorb 3% grain loss, talk less of 15-21% due to threshing and winnowing.

Suggested Ways Forward

A number of systemic interventions in the South West rice market are currently being executed by PrOpCom and its partners whom we believe are likely to shift the market in the direction earlier stated. It is our hope that PrOpCom working with the governments (at the various levels) in coming up with appropriate policies that tends to promote commercial instead of subsistence farming, would go a long way in promoting the emergence of mechanised threshing and winnowing service market in the South West.

7.6 Mobile Mechanized Threshing Machines and Small Farm Operations

Currently, most of the farms in the region are subsistence farming operations. In most cases farmers harvest their grains and store them at home before threshing. It is not clear what becomes of the chaffs produced as a result of homestead rice threshing. If they are used as fodders for their livestock, this could be understandable. However, we are of the opinion that threshing is better done on the field as the chaffs could serve as mulching material on the fields, thus reducing the emergence of post harvest weeds on the field. This apart, it will invariable reduce the cost of transportation and handling of rice on the stem. It is by far cheaper to transport paddy rice than rice grains on stem.

Suggested Ways Forward

The surest way of achieving this, is to make threshing and winnowing machines light weight and mobile. Such machines when properly designed can be transported to the field and operated manually but efficiently using a technology that can be powered through the propellers of a bicycle and or motorcycles, which are the primary means of transport to most of the locations visited. Such technologies may not be currently available, but it is worth looking into, as manually driven machines are not likely to be relevant down the line when volume of trade instead of margin dictates the future of the market.

8. COMMENTS ON THE WORKABILITY OF TOR

We thank you for the opportunity to execute the assignment on which this report is based. Having concluded this assignment, it is our wish to share a number of lessons learnt while in the process of executing this job. It is our hope that sharing our comments on the ToR and our experiences on the field with you would go a long way in helping to update each others knowledge and experiences with the hope of serving you better in the future.

8.1. Assignment Execution Timing

On the surface, this assignment appeared very simple, straight forward and easy to execute, but the realities as we as have always mentioned to you, are not what they seem. In working with farmers, there is a need for extreme caution and care in absorbing the information they volunteered. Most often than not, they tend to exaggerate their cost while understating their benefits. These apart, because of the level of their education, many of the respondents had difficulties providing standardized information on their operations and this is the most challenging aspect of the job of this nature. Measurements in terms of field size are not at all standardized and it is not particularly clear if farmers themselves have clear ideas of the size of the land they cultivate. In most situations, they have no title to the land under mentioned and such lands are not usually surveyed against which one could have an idea of the size. This in particular presents serious nightmares for field interviewers who at times, have to go to the farmland in order to come up with something reasonable regarding the size of the fields. You can imagine what this translates to in terms of man-days expended on the field. We suggest you take this into reckoning in the future.

While still on the issue of standardization, it was observed just as in the past, that measurements of outputs, labor, etc. are quite as varied as the location visited and at each point, all the information provide had to be converted from one form of volumetric measurement to weight measurement. In most cases, labors are paid based on output, and such outputs are measured in unique volumetric measurements, which are not standardized across the region. and this is indeed a nightmare. Even when the best of the best interviewers are deployed and editing well executed, one would still have to spend significant time data cleaning inputs and outputs of data analysis so as to make sense out of what is coming out. All these takes time and we would like to appeal to you to be mindful of your costing in the future.

8.2. Sample Size and Nature of Sampled Groups

In obtaining information from the respondents, we achieved 98% success rate. We sampled 80 farm households as stated in our proposal but out of this, we got 78 respondents. .The reason for this figure is that the response from two of the respondents was not useful and hardly can one make any sense out of it. For the threshing and winnowing service providers, we were successful in conducting interviews in only two states (Lagos and Osun) as farmers in Ogun and Ekiti States depend predominantly on migrant labor. Being out of season it was quite challenging getting respondents in this category. In the case of mechanized threshing service providers, there were none in the locations visited. You will recall that we decided to take on this group of providers at our cost as it would have been inappropriate to leave then out if all their services were present in the locations of interest. In all we conducted 104 successful interviews out of the 120 recommended by the client resulting in an overall success rate of 87%.

8.3 General Comments on the ToR

Generally speaking, we consider the ToR for this assignment well drafted, unambiguous and appropriate for the intended purposes which were clearly explained. Our only concern had to do

with its presumed level of efforts, which we consider under estimated. However, we thank you for the opportunity to serve you.