The Socio-economic Factors affecting Agricultural Development in the Lower River Benue Basin

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Abstract

The study assessed the socio-economic factors which serves as impediments to agricultural development in the Lower River Benue Basin. The study population constituted members of fifteen farmers' cooperative societies in Makurdi, Tarka, and Gboko Local Government Areas of Benue State. The method of data collection for the socio-economic survey included questionnaire administration, focused group discussions, interviews, and secondary information from published sources. A total of 300 questionnaires were administered and 281 were recovered. Significant socio-economic challenges identified include inadequate access to land, traditional methods of cultivation, inadequate access to credit, inadequate processing and storage facilities, small farm size, and inadequate access to farm inputs. The preponderance of agricultural activities had very little effect on the income of the population which was generally quite low. Factor analyses revealed that educationally developed and agriculturally literate communities have the highest potential to achieve adequate agricultural development. Provision of effective agricultural extension services and adequate support by Government at all levels will improve the agricultural value chain of the study area.

Keywords: socio-economic factors, crop cultivation, farm practices, sustainable agriculture, Lower Benue Basin, tropical agriculture

1. Introduction

According to Federal Ministry of Agriculture and Rural Development in Nigeria (FMARD, 2010), crop farming is the dominant agricultural activity in Nigeria; contributing about 85% to the agricultural gross domestic product (GDP). Despite this huge contribution, Okuneye and Adebayo (2002) described agricultural development in Nigeria as slow in spite of the various agricultural policies over the years.

As a consequence, Nigeria is said to have gone from a state of self-sufficiency with abundant foodstuffs to a nation of high dependence on food imports due to a number of reasons such as steady migration from the rural lands to urban areas; rapid growth in consumer preference of imported foodstuffs over local ones; and traditional farming techniques. As a result, the rate of food production has not kept pace with population growth (Aregheore, 2005). In order to empower people with adequate food security which is the goal of agricultural systems, efforts should be put into identifying, implementing, and promoting policy programs and investments both at private and public-sector levels (Adebayo et al., 2009).

Most of the agricultural produce in Nigeria comes from available wetlands (Babalola et al., 2011). The Lower River Benue Basin is regarded as an important source staple foods for the country. However, in recent years, a gradual reduction of agricultural produce has been observed from the reduction in supply chain to some processing plants in Benue (Shabu et al., 2011). It is therefore essential to assess the socio-economic factors which affect agricultural development in the Lower River Benue Basin.

2. Materials and Methods

The area of study is located between Latitudes 7° 13'N and 8^o00'N and Longitudes 8^o00'E and 9^o00'E and falls within the boundaries of Benue State. There are thirteen Local Government Areas (Makurdi, Gboko, Tarka, Gwer west, Gwer east, Guma, Buruku, Otukpo, Agatu, Ushongo, Ohimini, Obi, and Konshisha) covered either in whole or in part by the study area.

The study population constituted members of fifteen farmers' cooperative societies in Makurdi, Tarka, and Gboko Local Government Areas of Benue State. The method of data collection for the socio-economic survey included questionnaire administration, focused group discussions, interviews, and secondary information from published sources. Questionnaires with both structured and semi-structured questions were administered randomly to members of farmers' cooperative societies during focused group discussions. A total of 300 questionnaires were administered. However, only 281 were recovered.

Data analysis including descriptive statistics such as summary tables, comparative analysis, univariate summary statistics in tabular and graphical forms, and correlation analyses were performed in the Microsoft Excel and SPSS software environment. Exponential population growth and dependency ratios which were calculated using equations 1 – 4.

$$\text{Population exponential growth, } Pn \ = \ Po * (1 + r)n \tag{1}$$

Where P_o is the base population, r is the growth rate of the population at 2.8% (FGN, 2007), n is the time lapse in years, and 1 is a constant.

The overall dependency ratio is given by the following equations (World Bank, 2007).

$$\frac{\text{No.of persons under 15 or over 60}}{\text{No.of persons between 15−59 years old}} \text{ x } 100 \tag{2}$$

Or Old dependency ratio + young dependency ratio.

The young dependency ratio is given by the equation:

$$\frac{\text{No.of persons under 15 years}}{\text{No.of persons between 15−59 years old}} \text{ x } 100 \tag{3}$$

The old dependency ratio is given by the equation:

$$\frac{\text{No.of persons over 60 years}}{\text{No.of persons between 15−59 years old}} \text{ x } 100 \tag{4}$$

3. Results and Discussion

3.1 Population size and growth

According to the 2006 national census (FGN, 2007), the population of the state was 4,219,244. Males made up 51.29% (2,164,058) and females made up 48.71% (2,055,186). Using the mathematical population projection method (the exponential growth model), the 2006 population figures of the thirteen LGAs in the study area were projected to 2026. As observed in Table 1, the population of the study area would have doubled by 2016 and tripled to 6,920,319 persons by the year 2026. According to literature, rapid population growth is a significant challenge facing sustainable agriculture. The Food and Agriculture Organisation (FAO, 2009; 2012) stated that a total of 870 million people remain chronically undernourished, mostly in developing countries raising concerns about the implications of growing populations on global food security.

Table 1: Population of study area (2006-2026)

Communities	2006**	*2011	*2016	*2021	*2026
Makurdi	297398	388414	507285	662534	865297
Tarka	79494	103822	135596	177094	231291
Gboko	358936	468785	612252	799627	1044345
Gwer west	122145	159526	208348	272110	355387
Gwer east	163647	213729	279139	364567	476139
Guma	191599	250236	326818	426838	557468
Buruku	203721	266068	347496	453844	592738
Otukpo	261666	341747	446336	582932	761333
Agatu	115523	150878	197053	257359	336121
Ushongo	188341	245981	321261	419580	547989
Ohimini	71482	93358	121929	159245	207980
Obi	98855	129109	168622	220227	287625
Konshisha	225672	294737	384939	502745	656606
Total	**2378479**	**3106390**	**4057074**	**5298702**	**6920319**

**Census figures (FGN, 2007), * Calculated projections.

3.2 Demographic structure of respondents

As presented in Table 2, 55.3% were males and 44.7% were females. Majority of respondents (94.44%) were of Tiv ethnicity, other ethnic groups indicated include Idoma, Igede, Yoruba, and Hausa. The age structure revealed that the age brackets 20-29 years (27.10%), 30-39 years (26.34%), and 40-49 years (23.66%) formed the bulk of respondents. It was observed from field work that these age groups and a sizeable percentage of the age bracket of 50-59 years constituted the more active and productive farming population in the Lower River Benue Basin.

Table 2 shows the dependency ratio for the entire household population of respondents. As shown on Table 2, the economically dependent percentage of the population including young children and the very elderly, weighs heavily on the percentage working to earn active income. The importance of this ratio is a consequence of the fact that an increase impacts a strain on the active part of the population in order to provide for the economically dependent. These high ratios may not be unconnected with the high dependency on agriculture for sustenance, large family sizes, and the consequent over-exploitation of land without replenishment.

None of the respondents indicated they were cohabiting with a partner. However, 15.44% indicated that they were single. Majority of the respondents are married (78.31%) and 5.51% are widowed. The average household size obtained was 13 persons. According to the National Bureau of Statistics (NBS, 2013), the national average household size for the north central region of Nigeria is 6 persons. The household comprise of the household

head which could be either a man or woman who lives alone or is widowed. Others include a wife or wives, children, and relatives. Large families provide labour for farm activities, and as observed in rural areas, extended families live in separate homesteads in relatively close proximity to each other.

The level of education of residents in the Lower River Benue Basin influences the capacity of communities to improve farming practices and engage efficiently in other land use activities. Majority of the respondents have attained at least one form of formal education. Table 2 presents the educational levels of the respondents. The level of education with the highest percentage was secondary education (41.02%). Tertiary education was the next predominant educational level with a percentage of 35.16% and then primary school with 16.8%. The number of children in school as indicated by respondents was quite high. Most of the children were in primary (44.60%) and secondary (34.77%) school. Children in tertiary institutions made up (13.16%) while those attending vocational schools made up 6.09%. Only very few children had no recognized form of education.

Economic reasons and education have been mentioned by Oyeniyi (2013) as the highest reasons for internal migration in Nigeria. Oyeniyi (2013) found that other reasons cited for internal migration for which Benue state is mentioned include sex trade, unskilled labour, trafficking of children from disadvantaged rural homes to work in urban areas, and conflict and flood displacement.

Most of the respondents, as presented in Table 2, were born into the communities (41.80%) where they reside or have spent more than twenty years in the communities where they reside (21.10%). These data suggests migration among respondents is low. Some other respondents indicated they have resided in the communities between 16 and 20 years (11.3%), and between 11 and 15 years (7.8%). Those who indicated they were not native of the communities in which they reside, claimed various reasons for settling such as marriage, business, farming, and soil fertility.

Table 2: Demographic structure of respondents

Parameter	No. of respondents	Percentage (%)
Sex structure		
Female	122	44.7
Male	151	55.3
Age structure		
10-19	10	3.82
20-29	71	27.10
30-39	69	26.34
40-49	62	23.66
50-59	33	12.60
60-69	15	5.73
70+	2	0.76
Dependency ratio		
Young		84.34
Old		4.19
Overall		88.53
Marital structure		
Single	42	15.44
Married	213	78.31
Divorced/Separated	2	0.74
Widowed	15	5.51
Level of education		
Primary School	43	16.80
Secondary School	105	41.02
Vocational/Technical	12	4.69
Tertiary School	90	35.16
No formal education	6	2.34
Years of residence		
0-5	21	8.2
6-10	25	9.8
11-15	20	7.8
16-20	29	11.3
Above 20	54	21.1
Since birth	107	41.8

3.3 Livelihood activities of respondents

Farming is the main source of livelihood of respondents, however, some respondents were engaged in additional

activities. According to the Benue State Ministry of Agriculture and Natural Resources (Benue State, 2013), about 80% of the population of Benue state depends on agriculture for their sustenance and livelihood. A total of 74.60% of respondents indicated farming as either a first or second occupation. More than 50% indicated farming as a first occupation. Business and Civil Servants followed at a distant 13.80% and 13.10% respectively. Very few of the respondents indicated fishing as an occupation. Out of the total number of female respondents, 70% indicated farming as their main occupation. The percentage of men engaged in farming as indicated by respondents is 75%. The average household size of respondents that indicated farming as their main occupation was 14 persons. This was consistent with field observation findings that farmers in the Lower River Benue Basin mostly have large families.

Most of the respondents (70.27%) earn 30,000 naira and below monthly. The highest income level category was between 1,000 – 10,000 naira with a percentage of 30.89%. Less than 7% of respondents indicated that they earn above 80,000 naira every month. Most male respondents (70.3%) indicated they earned 30,000 naira and below while most female respondents (70.20%) earned 30,000 naira and below like their male counterparts. Analyses revealed that most married respondents (29.50%) earned between 1,000 and 10,000 naira. This indicates that even though agriculture is the predominant occupation in the Lower River Benue Basin, agricultural earnings are quite low.

3.4 Crop cultivation in the Lower River Benue Basin

The Lower River Benue Basin is known for the production of a varied number of agricultural produce such as grain crops, roots and tuber crops, legumes, and fruits. The most extensively cultivated crop in Benue state between 2009 and 2012 was cassava (Table 3). Yam, groundnut, rice and maize were also extensively cultivated during the same period. Ginger was the least cultivated crop between 2009 and 2012. Although Benue State has immense irrigation farming potential, this did not reflect in the area cultivated for tomatoes which is an important irrigable crop.

The output yield for cultivated crops in Benue State between 2009 and 2012 is presented in Table 4. The crops with the highest output between 2009 and 2012 were citrus and mangoes. Benue State produces high quantities of citrus and mango fruits annually. Cassava, yam, groundnut and rice experienced consistently high outputs between 2009 and 2012.

The output data for major crops produced in Benue State was correlated with area cultivated to test the strength of relationship (Table 5). The Pearson correlation returned a positive result ($p<0.05$) which suggests that a positively significant relationship exist between area cultivated and output. This means that the bigger the size of the area cultivated, the higher the output of crops. These results do not suggest intensive cropping is widely practiced in Benue State as crop output depends on the size of farm cultivated. Consequently, huge gaps exist in the Lower River Benue Basin with regards to intensive cropping, mechanised agriculture, and sustainable agricultural practices. As Olajide (2012) puts it, though crop production is on the rise in Nigeria, only about 50% of Nigeria's available farm lands are under cultivation. Smallholder and traditional farmers dominate crop production in Nigeria with the use of elementary production methods which result in low yields. Olajide (2012) posited that these farmers are plagued by several issues such as inadequate access to modern methods and equipment and credit, inadequate infrastructure, insufficient market access, poor land and environmental quality, and insufficient agricultural research and agricultural extension services.

Table 3: Cultivated area of major crops in Benue State (2009-2012)

Crops	Area cultivated ('000Hectares)			
	2009	2010	2011	2012
Maize	108.99	114.98	104.15	123.65
Millet	43.03	42.68	42.60	46.80
Sorghum	112.26	113.44	110.17	130.47
Rice	144.42	155.48	137.49	182.90
Cassava	276.03	281.50	267.63	294.65
Yam	226.76	228.14	225.97	289.49
Ginger	1.24	1.30	0.63	0.75
Melon	37.63	89.10	29.16	31.60
Tomatoes	13.35	16.30	6.93	7.95
Sesame seed	46.55	45.38	41.28	41.28
Groundnut	206.38	207.46	199.04	201.04
Soybeans	90.84	93.62	86.13	100.13
Citrus	101.25	152.12	69.52	70.57
Mangoes	97.94	106.38	35.10	45.10

Source: Benue State Ministry of Agriculture (2013)

Table 4: Production output of major crops in Benue State (2009-2012)

Crops	Output ('000Metric Tons)			
	2009	2010	2011	2012
Maize	148.61	175.94	139.56	162.53
Millet	65.40	66.15	65.18	69.05
Sorghum	192.46	199.65	191.70	198.60
Rice	289.66	327.27	227.73	397.79
Cassava	3,643.66	3,721.62	3,559.48	3,597.28
Yam	2,902.80	2,954.41	2,874.34	2,994.30
Ginger	3.12	5.69	0.27	0.97
Melon	41.65	44.32	29.16	38.36
Tomatoes	52.29	66.36	18.85	19.86
Sesame seed	47.95	55.52	40.45	41.45
Groundnut	371.82	414.59	358.27	365.45
Soybeans	181.68	196.60	169.68	108.67
Citrus	32,187	31,953.4	1,067.13	1,102.35
Mangoes	11,135	12,678.4	986.35	832.30

Source: Benue State Ministry of Agriculture (2013)

Table 5: Correlation values for area cultivated and output

Parameters		Crop Output
Area Cultivated	Pearson Correlation	.653[*]
	Sig. (2-tailed)	.011
	Sum of Squares and Cross-products	572035.672
	Covariance	44002.744
	N	14

*Correlation is significant at the 0.05 level (2-tailed).

The crops indicated by surveyed respondents were grain crops, legumes, roots and tubers, vegetables, and fruits (Figure 1). Grain crops indicated included rice, maize, guinea corn, and millet. Rice had the highest frequency of 20.44% and was followed by maize with 8.64%. Beans, soybeans, groundnuts and sesame seeds were among crops indicated. Beans had a frequency of 14.54% and soybeans had a frequency of 12.35%. Crops that fall into roots and tuber crops mentioned by respondents include yam, cassava, sweet potatoes, and cocoyam. Yam had the highest frequency of all the crops mentioned (25.24%) and cassava also had quite a high frequency (18.79%). Other crops mentioned were pepper, okra, vegetables (leaves), tomatoes, oranges and mangoes. Pepper was the most indicated vegetable. All others indicated they practiced mixed farming mostly at subsistence level.
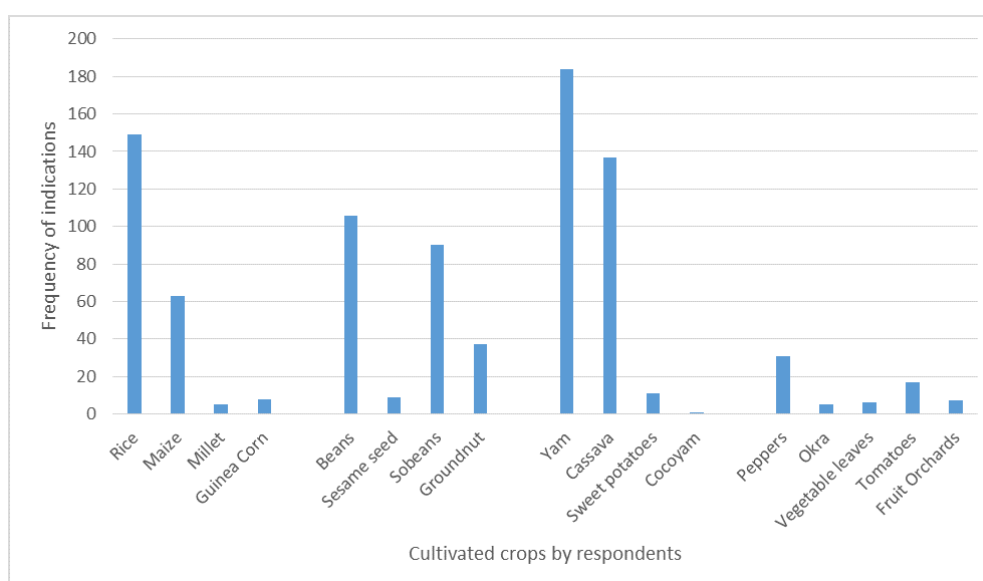

Figure 1: Cultivated crops indicated by respondents

3.5 Farm ownership and management

The predominant methods of crop cultivation the Lower River Benue Basin is traditional. This is because most of the respondents still use purely traditional farming methods (82.9%). Some respondents indicated semi mechanized methods (16.3%) and 0.8% indicated mechanized method of farming. The predominant farm size were between 1-5 hectares (37.5%). Other significant sizes include those between 5-7 hectares (21.3%) and 7-10 hectares (16.7%). Medugu (2006) decried the location of agricultural resources mainly in rural areas and called for monitoring of rural exploitation and production activities for sustainable agricultural development. The International Institute of Tropical Agriculture (IITA, 2008) explained that the implementation of sustainable agriculture should place emphases on enhancing livelihood activities and building the capabilities of rural dwellers, and that this approach could lead to improvement in sustainable outputs through agricultural technology transfer and appropriate management practices, improved availability of farm input and access to commodity markets, and a more dynamic policy environment.

Most respondents claimed they spend above 30,000 naira on their farms annually. More than half of the respondents (58%) spend more than 20, 000 naira annually on their farms. Another 33.9% indicated they spend below 15,000 naira annually. Information obtained about value of farm output from respondents suggest most of them are barely breaking even or making profit from harvest sales. The percentage of respondents that sell between 10-30% of farm output was 34%. Most respondents (56.8%) indicated that they sell between 40-70% of farm output. Another 9.2% indicated that they sell between 80-100% of output. Considering that 58% of respondents spend more than 20,000 naira annually on their farms, it is worrisome that just a little above that percentage (73%) realize harvest output with approximate values above 30,000 naira.

A number of respondents (57%) claimed that their farmlands were owned by their families. This suggests that they were only given permission to farm on these lands. Another 19.3% claimed they rented their farmlands while only 5.6% actually purchased their farmlands. A good number of respondents (65.5%) indicated that women can own lands for all purposes and another 34.5% answered otherwise. As regards whether women can own their own farms, 92.8% of respondents indicated affirmatively. Only 7.2% indicated otherwise. Most of the farms of respondents were within five kilometres from their households. Out of this majority, 13% have farms which are less than one kilometre from their households. Only 25% travel beyond 5 kilometres to carry out agricultural activities.

The distance of farms from households is crucial in explaining the difficulties farmers face in processing and transporting harvest to storages. Even though 87% of respondents have farms that are at least more than 10 kilometres from their households, 55.8% of respondents process harvest after transporting them home. Another 34.2% indicated that they process harvest in the farm with hired labour before transporting them to storages. The rest utilize community and commercial milling centres which would involve transporting the harvest to these centres. The high percentages of respondents processing harvest at home and in the farm with hired labour suggests that harvest are processed mainly through traditional labour intensive methods. According to Okojie (2007), most agricultural activities in Nigeria are carried out with manual labour which leads to low yield and wastages. Okojie (2007) recommended improved technology as one of the ways to enhance agricultural development in Nigeria.

3.6 Available amenities in the study area

Availability of electricity in communities can boost local industries and post-harvest agricultural activities. Inadequate electricity is a challenge in the Lower River Benue Basin and indeed many parts of Nigeria as the Government of Nigeria strives to improve power infrastructure. The National Bureau of Statistics (NBS, 2013) provided data on power blackouts in the north central region of Nigeria where the study area is located. According to the NBS (2013), respondents from the survey indicated that 3.3% never experienced blackouts; 63.5% experienced blackout every day; 26.6% experienced blackouts several times a week; 6.4% experienced blackouts several times a month; and 0.2% experienced blackouts several times a year. Table 6 shows the list of available amenities as indicated by respondents. Over 50% of respondents in this study claimed to have electricity supply.

Pipe borne water is grossly inadequate as only 23.3% indicated availability in their communities. Pipe borne water here may refer to community borehole projects by government. The most available facilities were the Global Satellite Mobile communication networks (86.2%) and markets (72.7%). Government schools (66.8%), radio signals (60.1%), and hospitals (56.9%) were also appreciably indicated. Banks were the least available. Only about half of the respondents (50.6%) had police stations in the communities. The inadequate level of community policing has given rise to several vigilante groups in many communities in the Lower River Benue Basin. Wide spread conflict between nomadic Fulani herdsmen and local farmers is quite common in the Lower River Benue Basin. These conflicts give rise to a huge number of internally displaced persons annually.

Table 6: Available amenities in the communities of respondents

Amenities	Frequency of respondents	Percentage
Electricity	133	52.6%
Pipe borne water	59	23.3%
Tarred roads	73	28.9%
Television service	110	43.5%
Radio signals	152	60.1%
GSM networks	218	86.2%
Banks	47	18.6%
Markets	184	72.7%
Hospitals (Government)	144	56.9%
Schools (Government)	169	66.8%
Police station	128	50.6%

3.7 HIV/AIDS in the Lower River Benue Basin

In a study by the Federal Ministry of Health Nigeria (FMOH, 2010), Benue State had a HIV prevalence of about 12%. Wannune which is the headquarters of Tarka L.G.A was the site with the highest HIV prevalence of 21.3% in the country. The sample site in Makurdi had a prevalence of 10.3%, and the site in Otukpo had a prevalence of 9.1%.

In 2013, an appraisal study on HIV epidemiology was conducted in Nigeria by the National Agency for the Control of AIDS (NACA, 2013). Benue State was one of the states selected for the study based on the high HIV prevalence rate of the state. The study was conducted in 10 L.G.As of the state utilising various methodology and interviewed 1,844 key informants. The study identified female sex workers (FSWs) and men having sex with men (MSM) as concentrated epidemics posing a huge risk to the spread of HIV in the state. The study discovered that 855 female sex workers (FSWs) hot spots existed with a population of about 10,034 female sex workers (Table 7). The total number of men having sex with men identified at hot spots in the state was 1,018 (Table 7).

Table 7: Population size and density of FSWs in Benue state Nigeria.

L.G.As	No. of FSWs	FSWs per 1000 Adult Men	No. of MSM at Hot Spots
Kwande	554	9	51
Okpokwu	430	10	127
Gboko	1229	14	255
Gwer-east	873	21	70
Katsina Ala	760	13	0
Takar	376	19	45
Ukum	895	16	10
Makurdi	1962	26	228
Otukpo	1715	26	175
Vandekya	1240	21	58
Total	10,034	17.6	1018

Source: NACA (2013)

According to NACA (2013), Makurdi and Otukpo had the highest population of FSWs and the state had a density of 18 FSWs per 1000 adult men across the whole State. Makurdi and Gboko had the highest number of MSM identified at hot spots in the state. NACA (2013) found that on the average, approximately 40 patrons visited hot spots on a typical day for casual partners, and 62% of these hot spot patrons came from zone 2 which comprised of Gboko, Gwer east, Makurdi and Tarka L.G.As (Figure 2).
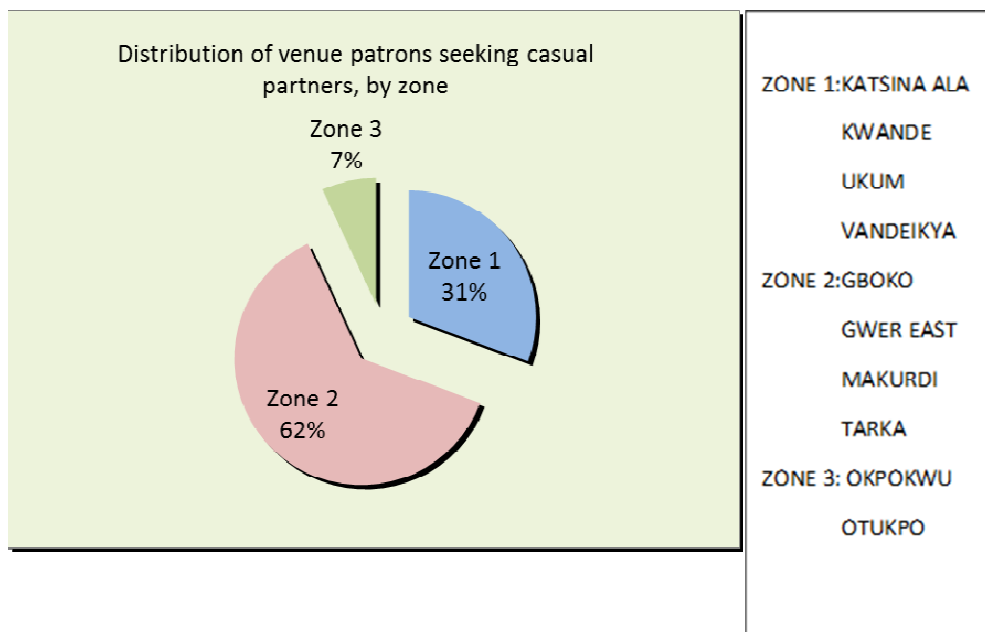
Figure 2: Distribution of patrons visiting casual partners in Benue state (NACA, 2013).

The study by NACA (2013) found that 38% of both married and unmarried men had ever visited a female sex worker, and 18% of both categories visited a female sex worker in the last six months. Transactional sex was reported by unmarried women (45%) and married women (30%) within the last six months of the study. NACA (2013) observed that multiple sexual partners were high across the sampled L.G.As among unmarried and married adults and recommended intensive HIV prevention efforts in rural populations in Benue state. These findings have huge implications for farming populations which exist mostly in rural areas in Benue state.

The percentage of respondents in this study who claimed to know about HIV was 84.5%. Another 15.5% claimed not to know HIV and 10.3% abstained from answering the question. HIV/AIDS is a health challenge capable of affecting the productivity of farmers and the livelihood of affected families in any community. The stigma and discrimination associated with HIV can lead to denial preventing infected farmers from seeking treatment. HIV stigma and discrimination can make affected famers abandon their communities for new ones or even abandon farming completely. HIV stigma and discrimination can affect the level of patronage for an affected farmer's goods. A total of 57.7% of respondents claimed they don't know any farmer who has HIV or has died from AIDS. However, another 42.3% claimed that they know farmers who have HIV or have died from AIDS. The responses on HIV prevention elicited from respondents was revealing. Even though most of the responses demonstrated basic knowledge of HIV prevention, they were poorly conveyed by most respondents.

3.8 Related socio-economic factors for agricultural development

Principal component analysis was carried on socio-economic variables using the correlation procedure to identify and explore component relationships between them and to determine factors responsible for agricultural development in the study area. The sum of the squared component loadings and the amount of variance accounted for by all the components is presented in Table 8.

Table 8: Presentation of variable communalities

Variables	Initial	Extraction
Age	1.000	.740
Household size	1.000	.790
Education	1.000	.858
Position in Household	1.000	.828
Years of residence	1.000	.758
Income (Naira)	1.000	.742
House type	1.000	.395
Harvest monetary value	1.000	.771
Farm size	1.000	.869
Farm distance from house	1.000	.642

Extraction method: Principal component analysis.

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The variance in the total collection of variables which are explained by the components is presented in Table 9. As shown in Table 9, 73.93% of the variance was explained by the 3 extracted and rotated components. Table 10 presents the results of each variable's loading on the three components extracted. For this study, positive correlation values above 0.5 and negative values farthest from 0 are significant.

Table 9: Total variance explained

Components	Initial eigenvalues			Extraction sums of squared loadings			Rotation sums of squared loadings		
	Total	% Variance	% Cumulative	Total	% Variance	% Cumulative	Total	% Variance	% Cumulative
1	3.757	37.567	37.567	3.757	37.567	37.567	2.992	29.920	29.920
2	2.205	22.049	59.616	2.205	22.049	59.616	2.236	22.356	52.277
3	1.432	14.318	73.934	1.432	14.318	73.934	2.166	21.657	73.934
4	.852	8.515	82.449						
5	.730	7.300	89.748						
6	.409	4.087	93.835						
7	.286	2.860	96.695						
8	.198	1.982	98.676						
9	.125	1.248	99.924						
10	.008	.076	100.000						

Extraction method: Principal component analysis.

The first principal component is positively correlated with six of the variables. The component seemed to increase with increasing education, harvest value, income, age, household size, and farm size. These six criteria vary together in component 1. An increase in one most likely prompts an increase in the others. The strongest variable in this component is education, which suggests that component 1 is primarily a measure of education. Communities with high number of educated people are most likely to have good harvest values, higher income, productive age structure, and appreciable farm size. The household position of individuals may however affect these observation negatively.

Component 2 shows a positive correlation with five variables. These variables are aligned and increase together. The variable with the highest value is years in the settlement/community. The high value for housing type suggests a lack of quality housing type. Even though, the number of years spent in the community influences household size, position in the household, and farm size, it does not improve the quality of housing.

The third component is increasing with farm distance from households and the figures show that this is negatively increasing age and years in settlement/community. Farther farms in communities may be owned by younger and newer settlers.

Table 10: Component matrix values

Variables	Component		
	1	2	3
Education	**.843**	-.263	.280
Harvest monetary value	**.838**	.155	.214
Income (Naira)	**.751**	-.160	.391
Age	**.746**	-.225	**-.364**
Years in settlement/community	.249	**.753**	**-.360**
Household size	**.556**	**.646**	-.254
Position in Household	**-.511**	**.636**	.403
Farm size	**.541**	**.616**	.445
House type	-.297	**.516**	-.202
Farm distance from house	-.460		**.654**

Extraction method: Principal component analysis.

These variables were rotated using the Viramax with Kaiser Normalisation (Table 11). The rotation converged in six iterations. The results show that component 1 was primarily increasing with education, and influenced the

Journal of Biology, Agriculture and Healthcare
www.iiste.org
ISSN 2224-3208 (Paper) ISSN 2225-093X (Online)
Vol.5, No.24, 2015

increase of income, harvest value and farm size. Component 2 primarily increased with number of years in settlement/community. This variable influenced the increase of household size and farm size. The increasing trend in component 3 is orchestrated by position in household. The individual's position in the household increases favourably with farm distance from house but was negatively affected by age.

Table 11: Rotated component matrix values

Variables	Principal component		
	1	2	3
Education	**.860**	-.102	-.327
Income (Naira)	**.845**		-.154
Harvest monetary value	**.802**	.297	-.198
Farm size	**.674**	**.559**	.320
Years in settlement/community?		**.867**	
Household size	.286	**.818**	-.200
House type	-.378	.453	.217
Position in Household	-.212	.307	**.830**
Age	.411	.116	**-.746**
Farm distance from house		-.296	**.744**

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.

4. Conclusion

Agriculture in the Lower River Benue Basin faces several challenges which threaten the future of agricultural development in the basin. Some of these challenges are driven by socio-economic dynamics bother on access to land, method of cultivation, access to credit, inadequate processing and storage facilities, farm size, and access to farm inputs. The preponderance of agricultural activities had very little effect on the income of the population which was generally quite low and was largely a function of the traditional methods employed by farmers. The study findings from principal component analyses showed that educationally developed and agriculturally literate communities will have the highest potential to achieve adequate agricultural development and growth targets. Effective agricultural extension services are currently inadequate and are required throughout the Lower River Benue Basin to enhance agricultural practices. Above all, adequate support from Government at all levels to provide adequate amenities including HIV/AIDS services, purchase excess produce, provide silo services, mechanized farming equipment, and credit facilities would build the capacity of the agricultural value chain of the study area.

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