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Measuring the Impact of Physiographic, Socio-economic and Administrative Factors on Adoption of Yam Technologies in Abia State, Nigeria.

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ABSTRACT. The work examines the socio-economic, physiologic and administrative impediments to the adoption of yam technologies in the area. One thousand two hundred (1200) copies of questionnaire were distributed, while one thousand and eighty one (1081) copies were retrieved, representing 90.08%. Percentage ratings for social impacts are; culture, 36.08%; level of education, 34.69% and gender discrimination, 14.99%. Economic Impacts included; poor financing 23.03%; low personal Income 21.00% and transportation difficulties, 21.37%. Physiographic impediments include; poor soil quality, 24.61%, water scarcity, 22.02% and loss of Farmland due to soil erosion, 18.04%. Administrative impediments also include; slow implementation of land use Act, 19.06%; poor system of fertilizer distribution 34.69%, fewer extension agents, 19.24% and insufficient funds for research institutes 17.95%. Among other things, it was recommended that, a yam production settlement area can be designated especially in areas where production is very low to increase land available for yam production.

KEYWORDS: Physiographic, Impediments, Yam Production Settlements.

I. INTRODUCTION

Food Production is necessary for the sustenance of human society. Its abundance and scarcity has defined and determined. Mode for livelihood of communities, nations and even the world, It has become a re-occurring decimal in the strategic planning options of various governments. Against the back drop of decreasing food production especially for the most vulnerable people, agricultural technologies were introduced to improve food production and make the people independent and less reliant on food products/ land that are given out every year by donor agencies. Nevertheless, problems of land conflicts, and ownership; increasing costs of inputs, pests and diseases, lack of education, economic down turn, wars and conflicts, political instability and corruption have contributed immensely in frustrating and limiting the expected gains from several technologies made available to the farmers (Madu,2014). In Nigeria, since the emergence of oil boom of the 1970s, there has been a dramatic increase in the incidence and severity of poverty arising in part from the dwindling performance of the agricultural sector where a respondent majority of the poor and rural dwellers are employed (Asumugha and Ekwe, 2011). Sanusi (2010) had earlier on noted that poverty in Nigeria had been assuming wider dimensions, including household income poverty, food poverty/insecurity, poor access to public services and infrastructure, unsanitary environment, illiteracy and ignorance, insecurity of life and property and poor governance. The small holder farmers are further constrained by problems of inaccessibility to modern inputs, credits and markets especially international market land and environmental degradation, and inadequate research and extension services. Given the above, it becomes imperative that improved yam seedlings emerge to strengthen food production and at the same time generate income for the farmers. With that in mind, and from the year 1988, the first set of technologies were developed by the National Roots Crop Research Institutes umudike in collaboration with IITA, Ibadan, to when a modified set of seedlings were introduced to problems that are physiographic, economical, social and administrative have combined to the rate of adoption of these technologies in Abia State.

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II. STUDY LOCATION

Abia State is one of the south eastern states in Nigeria and has the following coordinates; Lat 4^o 40' to 6^o 14' and long 7^o 10' to 8^oE. it has a total areas of 6320 Km^2 and subdivided into 17 local government areas. Abia State has a variety of land forms despite the fact that it is dominated by flat low-lying land, generally less than 120m above sea level (Ijeoma,2000). The low lying plain is the inland extension of the coastal plain from Bight of Benin. Nine geological zones exist in the area; they include, the coastal plain sand; Bende_Ameki group; Nkporo shale group; Nsukka formation; Igali sandstone (false bedded, sandstone), Eze-Azu shale group and Asu River group (Abia State Physics, 2007). Rainy season in the area commerces from march and ends in October, while with a break in August, while dry season begins in November and extends to early march. Heavy thunderstorms are characteristic of the onset of the rainy season. Total rainfall decreases from 2200mm in the south to 1900mm in the North. The hottest months are January to march when the mean temperature is above 27 mean temperature is above 27^oc. The relative humidity is usually high through the year, reaching a maximum during the rainy season when values above 90% are recorded. The soils in Abia State fall within the broad group of ferrallitic soils of the coastal plain sand and escarpment (Abia State Physcial, 2007). Other soil types include alluvial soils found along low terrace of the cross River. The soils are not particularly fertile and are prone to much leaching because of heavy rainfall (Madu, 2014)

III. METHODOLOGY

The study was conducted in three agricultural zones in Abia State. In each zone, two local government areas were selected and respondents allocated to them purposively. Each zone served as a stratum. This is presented in table 1. Subsequently, copies of questionnaire were usual to this for which helped to strengthened the outcome of the research.

Table 1: Selection of Respondents

Location	Agricultural zone	Number of Respondent selected
Isuikwuato	Abia North	200
Ohafia	Abia North	200
Ikwuano	Abia Central	200
Isiala Ngwa North	Abia Central	200
Osisioma	Abia South	200
Ukwa East	Abia South	200
Total		1200

Table 2: Rating of Response Intensity.

Agricultural Location & L.G.A	Number of Questionaire distributed	Number of Questionaire Returned	No of Questionaire not returned
Isuikwuato	200	180	20
Ohafia	200	185	15
Ikwuano	200	178	22
Isiala Ngwa North	200	172	28
Osisioma	200	180	20
Ukwa East	200	186	14
Total	1200	1081	119
Percentage	100	90.08	9.92

From tables 2 and 3, 20 copies of questionnaire were distributed equally to the six selected agricultural location out to which several returns were made. Generally, 90.08% were returned while 9.92% were with hold. The high rate of return is attributable to the method of questionnaire distribution method specifically, 15 assistants were engaged to administer the questionnaire. From 2, the agricultural locations/ Local Government areas were grouped into three main agricultural zones which are similar to the three senatorial zones in the state. The zoning system was established was not based on geographical or geological similarities rather based on administrative considerations since each zone is overseen by an Agric extension Officer.

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IV. RESULTS

Field investigation established that there were several measurable difficulties posed by socioeconomic, Physiographic and administrative factors that hindered the adoption of Yam technologies by farmers in the area, thereby reducing the adoption rates to lower percentages.

Table 3: Percentage Rating of Social Impacts on Adoption of Yam Technologies.

Location	Culture	Level of Education	Gender Issues	Religion	Health Impairment	Total
Isuikwuato	58	63	29	11	19	180
Ohafia	78	52	32	8	15	185
Ikwuano	60	64	25	7	22	178
Isiala Ngwa North	73	67	18	10	3	172
Osisoma	60	72	25	18	5	180
Ukwa East	61	56	33	26	10	186
Total	390	375	162	80	74	1081
Percentage rating	36.08	34.69	14.99	7.40	6.84	100

From table 3, Culture recorded the highest response rate of 36.08%; level of education 34.69%; gender issues, 14.98%; religion 7.42%, while health impairment recorded the least response rate of 6.84%. These are the social issues that farmers in the state considered to be inimical to the adoption of yam technologies in the area.

Table 4: percentage distribution of Economic Impacts on Adoption of Yam technologies

Location	Poor Financing	Low Personal Income	High cost of Prices of seedlings	Transportation difficulties	Non availability of input	Total
Isuikwuato	46	38	30	48	18	180
Ohafia	32	43	26	38	46	185
Ikwuano	41	28	30	42	37	178
Isiala Ngwa North	48	33	28	38	25	172
Osisioma	32	47	47	28	26	180
Ukwa East	50	38	33	37	28	186
Total	249	227	194	231	180	1081
Percentage	23.03%	21.00	17.95	21.37	16.65	100

In table 4, more than 23% of the farmers suggested that, poor financing is a rudimentary impediment to adoption of yam technologies. Other economic impairments include, low personal income, 21.00%, high prices of seedlings 17.95%; transportation problems, 21.37% and non availability of adequate farm inputs 16.65%.

Percentage Distribution of Physiographic Impediments hindering Adoption of Yam Technologies.

Location	Poor Soil Quality	Water Scarcity	Poor terrain	Inaccessible Forests	Loss of Land due to Soil Erosion	Total
Isuikwuato	48	36	28	33	35	180
Ohafia	38	46	40	28	65	185
Ikwuano	40	32	10	31	28	178
Isiala Ngwa	52	40	29	23	32	172

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North						
Osisioma	48	40	22	38	32	180
Ukwa East	40	44	42	58	2	186
Total	266	238	171	211	195	1081
Percentage	24.61	22.02	15.81	19.52	18.04	100

From table 5, more than 24% of the farmers observed that poor soil quality is a major impediment to the adoption of yam technologies. Others include; water scarcity, 22.02%; inaccessible forests 19.52%, loss of land due to soil, 18.04% and poor quality terrain, 15.81%

Table 6: percentage Distribuiton of Administrative inadequacies hindering adoption Process.

Location	Slow Implementation of Land Use Act	Poor System of Distributing Fertilizers	Insufficient funds for the	Fewer Extension Agents	Non Fuctionality of Agric Dept in LG.Quarts	Total
Isuikwuato	30	50	48	38	14	180
Ohafia	48	62	32	26	17	185
Ikwuano	26	58	26	40	28	178
Isiala Ngwa North	32	59	28	28	25	172
Osisioma	42	68	22	40	8	180
Ukwa East	28	78	38	36	6	186
Total	206	375	194	208	98	1081
Percentage Rating	19.06	34.69	17.95	19.24	9.06	100

From table 6, more than 34% of the respondent observed that poor distribution of fertilizers, the farmers' paramount responsible for hindering the adoption of yam technologies of the area. Other impediments include the slow implementation of Land Use Act of 19.79, 19.06%, fewer extension agents, 19.24%, insufficient funds for the research institutes 17.95% and non functionality of Agric Departments Stationed in the local government secretariats, 19.06%

V. DISCUSSION

The study revealed that yam production in the area are hindered by socioeconomic, physiographic, administrative and factors. Yam is regarded as a crop king and traditional titles are awarded to men who have distinguished themselves as biggest producers of yam. In some communities in Abia State, confirm "Eze ji" titles on biggest yam producers. This cultural phenomenon distinguishes women as the only growers and owners of yam. Gender designation over ownership, cultivation and harvesting of yam has contributed significantly to hindering adoption of yam technologies and subsequently improvement of yam harvest. In table 3, the farmers in the area identified the following factors as of yam technologies; culture, level of education, discrimination, especially in the growing and ownership of yam; religion and health impairment. Culture recorded the highest response rate of 36.08% followed by level of education, while health impairment was the least with 6.84%. In some communities, visitors are not given easy access to acquiring arable land for cultivation. This is an indication that the Land Use Act of 1978 is very ineffective in redistributing land ownership titles, as well as removing traditional bottlenecks to accessing land by intending farmers. Cases of early morning sickness have been reported among the farmers and corresponding treatment of each aliment and other related sickness are left for the farmers to handle, who then rely on medical quacks for treatment. Economic impediments as identified and presented in table4 include; poor financing, low personal income, high cost of processing seedlings, transportation difficulties and non availability of farm inputs. Among these issues identified, poor financing, low personal income and transportation recorded very similar responses; 23.03%, 21.00% and 21.37%. One of the greatest impediments to adoption process in the area has been poor financing. The farmers are not provided with financial incentives as their counterparts in other parts of the country. Yam growers in other areas have access to financial credits from banks especially Agricultural Development Banks, Ogbonna(2011) and Spore(2011) observed that the annual yam production

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capability of Nigeria is not less than 36.72million. Ogbonna(2011) went further to suggest that production capacity will increase to 50 million metric tons annually, but Abia State was not listed as among the states that are producing yam in large quantities and in it is these states that receive financial support for yam production. The states include; Benue, Anambra, Ebonyi, Enugu, Ondo and Cross Rivers, others include Plateau, Nasarawa and Kwara states. In addition, Akoroda (2011) and Ikeorgu (2011) observed that the high cost of 'clean' yam seedlings has also been a major implement to adoption of yam technologies. Physiographic impediments as presented in table 5 include; poor soil quality, 24.61%; water scarcity, 22.02%; poor terrain quality, 15.81%; inaccessible areas due to presence of thick forests, 19.52% and arable land lost to soil erosion, 18.04%. Chukwu, (2011) observed that during the conventional breeding or development of the hybrid yams, fertilizers were not used and was difficult to apply to improvised soils of the region under study. He further noted that soils are derived from sedimentary parent material deposited after earlier cycles of weathering. While the soils derived from coastal plan sands are coarse-textured with preponderance of macro porosity to encourage high infiltration, percolation and leaching of basic cations. The soils generally suffer multi-nutrient deficiencies with particular references to N and K. Another significant physiographic factor is erosion. Alozie (2010) carefully articulated the erosion prone sites in Abia state. It affected the following Local Government Area, Bende, Aba North, Aba South, Isuikwuato, Ikwuano, Osisioma, Isiala Ngwa South, Arochukwu, Isiala Ngwa North, Ohafia, Umunneochi and Umuahia North. In 1981, Oformata (1981) obsereved that Aba (North and South), Isiala Ngwa (North and South), Osisioma and Ukwa were not ravaged by any form of soil erosion, but by 2010, new gully sites had formed in Isiala Ngwa (North and South), Bende and Umuahia (North and South). Thus soil erosion has considerably reduced arable land, available to farmers for yam production. A typical situation critical for yam development as Alozie, (2010) is emerging land conflicts arising from eminent struggles for the remaining land by the farmers.

Factors, identified as administrative impediments in table to include: slow implementation of the Land Use Act, 19.08%, poor system of fertilizer distribution, 32.69%, insufficient funds, 17.95%; fewer extension agents, 69.24% and non availability of functional Agric Departments in local government headquarters, 9.06% similarly Apu, (2004) observed that improper fertilizer distribution was a major setback in the adoption of new cassava varieties introduced in Ohafia Agricultural Zone. Madu, (2014) then added that the present fertilizer distribution system in the area is not productive, given that farmers are allowed to buy fertilizers if given the open market and at an exorbitant rate implementation of the Land Use Act of 1978 has not been very effective on securing readily, arable Land for yam producers. Issues of complexities arising from ownership transfer and utilization of land has continued unabatedly without much relief the arising correspondingly from the provisions and processes of the Land Use Act. In addition, fewer Extension Agents are available to convey the new technologies to the farmers. Impact, only one extension officer is appointed for each agricultural zone, it is very impossible for proper coverage to be made by the extension agents.

VI. CONCLUSION.

We conclude that the adoption of yam technologies is still very low in the area. As earlier on mentioned, Abia State, though a yam growing area was not listed among the states producing the largest quantity of yams. This rate of adoption yam technologies could be improved of the impediments highlighted in this work are eliminated. The key to this is sustainable implementation of strategic policy framework.

VII. RECOMMENDATIONS

Government intervention can reduce the impacts of physiographic, economic, social and administration impediments to adoption of yam technologies. Full implementation of the provisions of land use Act especially in the area, access to land, size of farmlands and procurement of statutory deeds to land can also be very productive. Similarly, Asumugha and Ekwe (2011) further suggested that adoption of yam technologies and production of same can also be improved if domestic production of fertilizer is encouraged, expansion of land areas under irrigation, development of rural infrastructure, strengthening of agricultural research and extension, services and overhauling the agricultural finance system. Gender discrimination in yam production is also very necessary to abolish. We also recommend that land allocation to yam production can be increased by designating some areas as yam production settlement (YPS) especially in the areas where yam production is very favourable.

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