

Analysis of Constraints and Prospects of Pineapple (Ananas comosus) Production in Delta State, Nigeria.

Abstract

Pineapple is a delicious tropical fruit with a fine flavor and high nutritive value. It is one of the most important commercial fruits crop in the world. Despite its popularity there are no enough data on the problems and Delta State in particular. Multi stage sampling techniques was used to obtain relevant information from some pineapple farmers from one Agricultural Zone in Delta State. Data collected were analyzed using descriptive statistics such as frequency distribution, percentages and mean. The result indicates that majority (47%) of farmer are within middle age with a mean of 45.2. The average period of experience in pineapple farming was 12.8years. The result also revealed that most of the farmers are located far from their residence (78.3%), while majority (50%) of the pineapple farmers cultivated local variety of pineapple. Respondents attested to the fact that there is high prospect for prospective pineapple investors and exiting farmers in the area. The identified potentials include; boosting of income ($\bar{x} = 2.60$), promote good health through consumption among farmers ($\bar{x} = 2.52$) and check social vice as a result of idleness ($\bar{x} = 1.84$) among others. The major identified problem of pineapple production of the farmers includes; lack of improved planting materials, high fruit perishabilty, low fruit price e.tc. The study recommends that government should established cold storage facilities to reduce fruit perishability, make available improved varieties of pineapple to farmers and easier access to loan from government and NGO to increase yield of pineapple

1.0 Introduction

28 Pineapple is the most economically plant by most family. It belong to the family
29 bromediodeae. It is known as the queen of fruits because of his excellent flavor
30 and taste. Pineapple contribute over 20% of its world production of tropical
31 fruits (Coveca, 2002). Pineapple is a wonderful flavor and immense health
32 benefit (Joy, 2010). According to Ubi et al,(2005), the pineapple plant are
33 drought tolerant and well adapted to the tropical sandy soil with PH ranging
34 from 4.5 to 6.5. The plant is propagated from suckers or from the crown which
35 grow on top of the fruit. It is one of the most important commercial fruit crops
36 in the world available throughout the year. Pineapple production in 2011
37 constituted more than 19 million metric tonnes.

38 Production of pineapple in Nigeria accounted for 1.4 metric tonnes in
39 2011(about 7% of the World production) which place it in the seventh position
40 (FAOSTAT, 2013). It is grown for eaten both for the fresh and processed
41 products which make it an important food (Iwuchukwu et al., 2017). In developing
42 country like Nigeria, particularly in Delta State most fresh pineapple produced
43 are sold in domestic markets and bought for domestic consumption (Spore
44 Magazine, 2008). Moreso, the fruit juice market in Nigeria has witnessed a
45 tremendous growth since 2002 (Manufacturing Today, 2011). Belvyna Global
46 Nigeria limited (2018) disclosed that Nigeria is the largest producer of fresh
47 pineapple on the African continent. The report further presented in a table the
48 quantity of metric tonnes of fruits produce in three different countries as shown
49 below;

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54	Crops	Nigeria	Kenya	South Africa
55	Pineapple	920,000	371,310	108,636
56	Mangoes	795,000	636,585	52,318
57	Watermelon	139,223	66,196	77,993

58 The report further posited that pineapple is more popular due to its sweet sour
59 taste containing 15% sugar, malic and citric fruit acids.

60 **BGNL** (2018) stated that pineapple is high in vitamin B₁, B₂, B₆ and C.
61 Pineapple contain protein digesting enzyme called bromelain that help in
62 digesting at the end of a heavy protein meal(Nwosu, 2011). Pineapple leaves
63 can be used in three forms; dried and in silage (Geocoppens, 2001). Centrifuge
64 sludge left over from juice production may be used as pork feed (FAO, 2004),
65 while fruit core is used in preparing candy. Pineapple is used as ornamentals
66 symbolizing welcome, high living and opulence.

67 Until recently, about 80% of pineapple produced in Nigeria from small scale
68 farms that were managed under mixed cropping system. Access to international
69 markets **has given rise to high of** value of fresh fruits, resuscitation of pineapple
70 cultivation and local processing have **also** recently **be** encouraged **and**
71 development of few **pineapple** large scale farms where pineapple is produced as
72 a mono crop (Adesope et al, 2009 and Kochhar (2006).

73 Despite Nigeria position and potential in pineapple production in the World and
74 the enormous economic advantage the country derive from the crop; Nigeria has
75 the lowest productivity of about 7 tonnes per hectare when compared with the
76 other nine top producers in the World. Nigeria has only a small share of 5% in
77 the World wide pineapple production (FAOSTAT, 2010 and Mark, 2010). In
78 other words the Nigeria pineapple production is low and inadequate to meet the
79 increasing demand in the country (Mark, 2010). This study was designed to

80 examine the problems and prospects of pineapple production with a view to
81 increasing pineapple productivity in Delta state. Nigeria. Specifically, the study
82 objectives includes, identify the social-economic characteristics, pineapple
83 production practices, potentials of pineapple production and constraints of
84 pineapple farmers in the study area

85 2.0 Methodology

86 2.1 Area of Study

87 The study was restricted to three (3) local government areas
88 (L.G.A) of Delta State, namely Isoko North, Isoko South and Ughelli South.
89 The study focused on all the pineapple farmers in the study area. The study
90 area experiences two seasons; the rainy season which last from April – October
91 and the dry season from November to March. The annual temperature varies
92 between 27⁰c and 37⁰c with relative humidity of between 70⁰c and 80⁰c in
93 July/August. The soil in the study area is predominantly clay-loam in texture.
94 The major crops produced in the area include pineapple, cassava, pepper,
95 plantain and maize etc.

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97 2.2 Method of Data Collection

98 Primary and secondary data were used for this study. The primary data
99 were collected by means of structured questionnaire and interview schedules
100 administered to (64) notable pineapple farmers in the chosen communities with
101 the assistance of the Block Extension Supervisor (BES) and Extension Agents
102 (EA) attached to the three selected local government area. On the other hand,
103 the secondary data were obtained from relevant publications.

104 Relevant information extracted from farmers includes; socio economic
105 characteristics of the pineapple producers, pineapple production practices i.e.

106 variety of pineapple grown, source of planting material, cropping pattern
107 adopted, method of land preparation, problems and prospect of pineapple
108 production. 60 questionnaires were retrieved from the farmers and four were
109 not returned.

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2.3 Sampling Techniques

A multi- stage sampling technique was adopted to select the study area and sample size. Firstly one **Agricultural Zone- Delta Central** was randomly selected out of the three agriculture zone in Delta State i.e Delta South, delta central and Delta North. Secondly, three LGA- Isoko North, Isoko South and Ughelli South were purposively selected from Delta Central out of eight local government that makes up the Zone due to the existence of high population of pineapple producers in the chosen L.G.A. Thirdly, three communities were purposively sampled from each LGA to give a total of nine communities. The communities include Ozoro, Owhelogbo, Iyede, Oleh, Aviara, Emede, Otujeremi, Ewhu and Ekakpreme

Finally, eight pineapple farmers were sampled purposively from each selected communities. A total of 64 respondents based on popularity and their level of involvement in the pineapple production were interview

2.4 Analytical Techniques

The data collected were presented and analyzed using descriptive statistics such as frequency distribution, percentages and mean.

3.0 Results and Discussion

3.1 Socio Economic Characteristics of the Pineapple Farmers

Table 1 revealed that pineapple production enterprise is dominated by male farmers i.e (70%). The predominance of male farmers in the study area can be attributed to the labour intensive nature of pineapple farming which can be tedious and time consuming especially for female who have to combine farming activities with their domestic duties. Another reason for male dominance is the belief that women in the area do not inherit farmlands. This finding corroborate of the work of Baruwa (2013) and Effiong (2005). Majority

(50%) of the pineapple farmer were 51 years of age and above. This shows that respondents were ageing. The mean age of respondent was 47.4 years. This means that effort should be geared towards encouraging youths into pineapple production. This is because aged farmers are often not amenable to change and not likely to adopt improved technologies nor have the desired physical strength to do manual work as the youth (Nwaru, 2004), Ajibifun and Adernole, 2003). Moreso, the result in table 1 also revealed that majority (65%) of the respondents were married with a high proportion (60%) of the farmer's household size of 1-5 person with a mean of 5.5. Nwaru (2004) asserted that household size is expected to enhance labour availability. On the contrary, Okike (2000) opined that the use of available family labour on small sized farms will result in overiodization and hence inefficiency. The larger the farm household size the more likely the farmer labour will be available to enhance the practice of various improved pineapple technologies. Furthermore, a higher proportion (83.3%) of the pineapple farmers had one level of education or the other. This implies that most of the respondents were literate. The result also shows that 16.7% are illiterate

Table 1 revealed that majority (48.3%) of the respondents have farming experience between 1-5 years, while the remaining 51.7% of the respondents has experience between 6-15 years. The mean farming experience of the respondents was 12.8 years. The result shows that there is relative high farming experience in pineapple production in study area. This implies that the pineapple farmers in the study area have sufficient experience in the pineapple farming. This finding is in agreement with the finding of Effiong (2005) who reported that the average farming experience of pineapple farmers in Osun State was 13.5 years.

With regards to the respondents household income, the result showed that majority (55%) of the respondents annual income was between ₦100,000 to

164 ₦150,000 annually, while the means annual income per pineapple producer
 165 was ₦70,958.33 and monthly income was ₦5,913.19.

166 Moreso, table 1 revealed that all the farmers (100%) interviewed agreed
 167 that they are into pineapple farming. The result also showed that the pineapple
 168 producers source their capital from personal savings and they affirmed that they
 169 have difficulty getting the desired finance to expand their production level.

170 Table 1: Distribution of socio economic characteristics of 60 pineapple farmers

Characteristics	Frequency	Percentage (%)
Age (years)		
21-30	3	5
31-40	8	12.5
41-50	18	30.5
51 and above	30	50
Total	60	100
Sex(gender)		
Male	42	70
Female	18	30
Total	60	100
Marital status		
Single	5	8.3
Married	39	65
Widowed	10	16.7
Divorced	6	10
	60	100
Educational level		
On formal education	10	16.7
Primary education	14	23.3
Secondary education	28	46.7
Tertiary education	8	13.3
	60	100
Farming experience (years)		
1-10	29	48.3
11-20	18	30
21-30	13	21.7
	60	100

Household size (persons)		
1-5	36	60
6-10	18	30
11 and above	6	10
	60	100
Annual income(₦)		
No response	5	8.3
5,000-50,000	15	25
51,000-100,000	23	55
101,000-150,000	16	10
151,000-200,000	Nil	-
201,000 & above	1	1.7
	60	100
Mode of farming		
Fulltime	11	18.3
Part time	49	81.7
	60	100
Sources of finance		
Personal savings	36	60
Loan	6	10
Inheritance	18	30
	60	100

Source: Field Survey, 2017/2018 cropping season

3.2 Pineapple Production Practices

3.2.1 Production location

Table 2 shows that majority (78.3%) of the pineapple farmers has their pineapple production farm located far from their home, while 21.7% of the farmer planted their pineapple in nearby farmlands. This implies that there will be an increase in the cost of transportation of pineapple from the point of production to the market simply because most of the farmer's pineapple farms are sited far from their residence. It will also probably result in consumers paying higher to purchase pineapple. It will also mean that the pineapple farmer may find it difficult to maintain their

farm land in terms of weeding as well as rodent control. Often a time, there could be resultant losses and damage of produce during transportation due to poor road.

3.2.3 Variety of pineapple grown

The result in the table 2 revealed that majority (50%) of the pineapple farmers source their suckers locally, while 40% and 10% make use of improved variety and both improved and local variety respectively. The result implies that a high proportion of pineapple farmers harvest may become low, thereby affecting their source of income. This could possibly discourage prospective and existing farmers in the area from investing in pineapple production.

3.2.4 Cropping Pattern

Table 2 revealed a high proportion (70%) of the pineapple farmer practiced mixed cropping, while the remaining 30% are into sole cropping. Iwuchukwu et al., 2017 reported that mixed cropping offers the farmers insurance against total crop failure this practice helps to control soil erosion and weeds. Moreso, it also result in better distribution of farm labour that sole cropping, mixed cropping is used traditionally by peasant farmers to avert risk so as to diversify their production (Iwuchukwu et al., 2017).

3.2.5 Type of fertilizer

Entries in table 2 revealed that most (50%) of the principle farmers do not make use of fertilizer in their pineapple farm, while the remaining (50%) of the respondent used either organic or inorganic and both organic and inorganic. The implication of this is that when the farmers apply

208 suitable fertilizer in their farmlands that are not fertile good yield will be
209 recorded.

210 3.2.6 Method of weed control

211 Table 2 revealed that majority (75%) of pineapple farmers
212 controlled their weed using manual weeding, 25% of the farmers result to
213 chemical weeding and none make of hand picking. This implies that most
214 farmers adopt manual weeding, which often result in intensive use of labour that
215 constitute heavy task and high cost. The finding shows that their production is
216 purely organic and environmental friendly and their produce are usually healthy
217 for consumption.

218 3.2.7 Method of trapping rodents

219 Table 2 revealed that high proportion of the respondents(50%) make use
220 of trap to control rodents, while 35.0% and 15% make use of scare crows and
221 chemical respectively to control rodents . the result show that pineapple farmers
222 usually suffer losses due to rodent attacks since their farmlands and surrounded
223 by thick bushes and located from their residences

224 3.2.8 Methods of harvesting

225 Result in table 2 shows that all (100%) the pineapple farmers harvested
226 their produce manually. This implies that the farmers are constrained by the
227 absence of basic equipment and this affects their scale of production.

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233 Table 2: distribution of farmers based on pineapple production practices.

Variables	Frequency	Percentage (%)
Production location		
Farm located far from residence	47	78.3
Nearby farm	13	21.7
Within the residence	Nil	--
Total	60	100
Variety of pineapple		
improved	24	40
local (indigenous)	30	50
Both improved and local	6	10
	60	100
Cropping pattern		
Sole	42	30
Mixed	18	70
	60	100
Types of fertilizer used		
Organic	9	15
Inorganic	15	25
Both organic and inorganic	6	10
None	30	50
	60	100
Method of weed control		
Use of chemical	15	25
Manual weeding	45	75
	60	100
Method of trapping rodents		
	21	35
Use of scare crows	30	50
Use of traps	9	15
Use of chemical	60	100
Method of harvesting		
	Nil	--
Manually	60	100
Mechanically		

234 Source; field survey, 2017/2018 cropping season

3.3 Constraints to Pineapple Production

Table 3 shows the problems militating against the effective production of pineapple in the study area and ranked in descending order of severity. According to the perception to the pineapple farmer as indicated in table 3 the prevalent problems identified include; lack of improved planting material, high fruit perishability, low fruit price, high cost of labour, lack of access to credits, insufficient land, rodent attack, weather and diseases, lack of processing and storage facilities and high cost of transportation.

The finding the study revealed that lack of improved planting materials is identified to be major (83.3%) constraint in the pineapple production in the study area. This result is in the agreement with the research of Kayitesi (2011) that reported that shortage of quality planting materials affect small scale pineapple growing in Ngoma District of Rwanda. The lack of improved planting materials has often result to low productivity because the local variety used for planting by majority of the farmers does not give enough yield. A high quality planting materials enable high yield in production.

Data contained in table 3 revealed that 73.3% of farmers complained on perishability of the pineapple fruit. This result is in conformity with the finding of Amao et al., (2011) who stated that perishable nature of pineapple fruit is the major constrained to pineapple trade in selected markets of Osun state, Nigeria. High fruit perishability is ranked second among the factors militating against pineapple production.

Table 3 reveals that majority (55%) of the respondents attested that low fruit price of pineapple product is one of the

constraints of pineapple production. The study revealed that the producers share in consumer price is very low due to market intermediaries. This result is in conformity with the finding of Baruwa (2013) who reported that producers share in consumer price is quite very low due to unnecessary market intermediaries. Furthermore, the result shows that 46.7% of the respondents mentioned that high cost of labour is a problem. It is the 5th identified problems affecting pineapple farmers. Available labour in the area is competed for by agricultural activities or non agricultural activities, thereby reducing the labour required to maintain the pineapple farms. The cost of engaging labour in the farm to cultivate and maintain new pineapple farm is quite high.

Table 3 shows that lack of access to credit facilities is the 6th most serious constrains to pineapple farmers. 43.3% of the farmers reported that is difficult getting loan from the bank due to the demand for collateral and high interest charge by the banks which the farmers cannot afford. These have resulted in reduction in scale of production due to their inability to acquire better farming implements for pineapple production.

When pineapple farmer lack access to credit, it will be most impossible for them to operate in a commercial and cost effective manner. This finding is in agreement with the report of Famogbiele (2013).

The study revealed that 36.7% of pineapple farmers complained about the insufficient land. Communal system of land ownership prevailed among farmers in the study area in which an individual ownership of land is through inheritance. Communal ownership of land in Nigeria has been associated with the problems of limited tenure security. Most farmers explained that adequate land is

needed if they are to attain enough yield as growing smaller farms give rise to low yield and inevitable fragmentation of land holding among rural farmers. This finding agrees with Akhilomen et al., (2015).

The harmful effect of rodent attack (30%) was ranked 8th constraint that faces pineapple farmer in the area. This closely followed with the problem of rodents.

Farmers reported that rodents such as grasscutters, rabbit and squirrel destroy pineapple products (fruits) in the field because the farms are located far from residence. The next problem is that of weather and diseases. The problem of disease results in losses in pineapple production in the study area. Pineapple disease is often caused by unhealthy planting materials and poor farming practices. Farmers indicated that they are unable to get enough suckers that would plant there prepared farmland for pineapple, hence they collect free and buy pineapple suckers from other farmers which are mostly infected by diseases. Pineapple mealy bug disease was reported to the commonest pineapple disease in the area. Unfavorable weather makes pineapple production to be low, while during favorable weather the yield is usually very high and give room to high profitability in pineapple farming.

Lack of processing and storage facilities was ranked as the 9th constraint by 21.7% of the farmers. The mature pineapple fruit cannot be stored for more than 4 to 5 days after harvesting. The farmers must consider injuring the fruits during harvesting and during transporting to major consumption centre. There are no processes facilities and cold storage to improve the marketability of fruit. Hence, farmers are forced to sell of their pineapple fruit

cheaply to marketers at very low price. Pineapples are chill-sensitive and should not be stored in the refrigerator.

Finally, high cost of transportation also affects the production of pineapple in the study area. The study revealed that 16.7% of the farmers' interview claimed that because pineapple fruit are heavy they pay huge money to transport them to major consumption centers and in the cities.

The finding shows that pineapple farmers in the area do not have access to qualitative market information system as this is very important to enable them benefit by exporting their produce.

3.4 Potentials of pineapple production.

Table 3 revealed the potential for pineapple investors in the study area. The potential for investors of pineapple as shown below in table 3 and their weighted mean in descending order includes; boosting of income ($\bar{x}=2.60$), promote good health through consumption among farmers ($\bar{x}=2.52$) check social vices as a result to idleness ($\bar{x}=1.84$), minimize urban immigration ($\bar{x}=1.81$).

Variables with means value of equal to or greater than ($\geq$) 2.00 were found to be significant and capable of influencing investment in pineapple production, while variables with less than <2 were regarded as not significant and do not influence investors in pineapple production in the study area. This finding is in agreement with the research of Iwuchukwu et al (2017). The above result shows that boosting of income with a mean score of ($\bar{x}=2.60$) and good health through consumption ($\bar{x}=2.52$) were find to be significant to potential of pineapple production in the study area among the farmers.

3.5 Conclusion and Recommendation

The problems of pineapple production in the study area includes; lack of improved planting materials, high fruit perishability, low fruit price, high cost of labour among others.

The identified prospects of investors in pineapple production in the study area are; boosting of income, promote good health through consumption among farmers, check social vices as a result of idleness and minimize rural urban migration among others. The study recommends as follows,

- (1) That government should established cold storages facilities to reduce fruit perishability.
- (2) That government should make available improved varieties of pineapple (high yielding) to enhance farmers productivity.
- (3) That government should revive the agricultural prices support programmes
- (4) That government and NGOs should support pineapple farmers with loan also subsidized cost of production inputs
- (5) That government should promote research targeted at improving pineapple production.

372 Table 3: distribution of respondents based on constraints encountered by
 373 pineapple famers (60 respondents)

Received constraints	Number of farmers	Percentage (%)	Ranking
1. Lack of improved planting materials	50	83.3	1 st
2. High fruit portability	44	73.3	2 nd
3. Low fruit price	33	55	3 rd
4. High cost of labour	28	46.7	4 th
5. Lack of access to credit	26	43.3	5 th
6. Insufficient land	22	36.7	6 th
7. Rodent attack	18	30	7 th
8. Weather and diseases	15	25	8 th
9. Lack of processing and storage faculties	13	21.7	9 th
10.High cost of transportation	10	16.7	10 th

374 Source: Field survey, 2017/2018 cropping season

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382 Table 4: distribution of perception of respondents based on potentials of the
383 pineapple production

Perception of farmers on potential of pineapple production	Mean ($\bar{x}$)	Ranking
Source/ boasting of income	2.60	1 st
Promote good health through consumption among farmers	2.52	2 nd
Check social vices as a result of idleness	1.84	3 rd
Minimize rural –urban migration	1.81	4 th

384 Source: Field Survey, 2017/2018 cropping season

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