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CHALLENGES OF COMMERCIAL PRODUCTION OF GINGER, GARLIC AND TURMERIC IN BAYELSA AND RIVERS STATES OF NIGER DELTA, NIGERIA

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Abstract

The study researched the challenges of commercial production of ginger, garlic and turmeric in selected parts of Bayelsa and Rivers States of Southern Nigeria. It involved the use of a questionnaire in generating the data for analysis. Four (4) towns were selected from the two states. From the research, a number of challenges were identified, among which were “ignorance of the farmers on the viability and profitability of these crops, preservation process, marketing of the products, lack of attention given to these crops by other farmers, socio-economic challenges, the climatic condition of the study area, and inaccessibility to loan facilities and extension services. These crops have a lot of economic benefits as well as health benefits. SPSS (Statistical Package for the Social Sciences) was used to analyze the data. The conditions of the study area are suitable for planting these crops based on the following standard parameters: namely, surface pressure, air temperature, relative humidity, sea surface temperature, precipitation, and solar radiation. One could really wonder why these crops are not produced commercially, notwithstanding their numerous health benefits and commercial value. There should a serious sensitization exercises to educate farmers and others on the production of garlic, ginger, and turmeric. There should be accessibility to loan facilities and specialized trainings on appropriate farming methods and support to interested farmers would bridge this gap of low commercial production of these lucrative spicy crops contribute immensely to the economy of the communities, states, and the nation at large.

Keywords: Ginger, Garlic, Turmeric, Commercial Production, Preservation

INTRODUCTION

Nwaru et al. (2013) stated that approximately three-quarters of the world's poor people depend immediately or indirectly on subsistence agriculture for their livelihoods. Subsistence agriculture is a significant sector of the Nigerian economy with significant potentials and opportunities for process creation, food production, and value addition to food products within the food cost chain. It is essential to promote agriculture in countries with a large agricultural sector, like Nigeria, to achieve food security and reduce hunger and poverty. Amazingly, Nigeria is the world's top producer of cassava, and some farmers profit greatly from the staple crop. Iranloye, a Nigerian queen of cassava, is one such person. She is said to have defeated all international corporations and kept her position as company leader. With an annual revenue of \$12 million (₦5,136,120,000.00) and an output of over 10,000 lots of cassava, Iranloye is an excellent example of an extreme farmer who wants the government to provide her every incentive to increase production (Onyirioha, 2023; Okonji, 2012).

Mojisola (2020) stressed that rain continues to be the main supply of water for growing crops in the majority of sub-Saharan Africa (SSA). Farmers in the area typically wait until the wet season to start planting. Sadly, this time of year's excessive rains result in flooding, which hinders agricultural activity. Flood is defined as "the flooding of the land surface and its miles induced by seasonal accumulation of rainwater, river discharge, or tidal phenomenon" in a study by the Food and Agriculture Organization (FAO) of the United Nations. In farming areas, unpaved roads and a lack of top drainage structures make it difficult for excess precipitation to be effectively directed away from soggy farmlands. Additionally, a significant contributor to floods is weather change, which raises water temperatures and increases precipitation in various areas. In Nigeria's Oyo State, my herb garden in Lagelu Local Government Area and the food crop fields owned by other farmers in the neighbourhood are not exempted from the consequences of severe rain. When there is water, it is practically hard to labour in our crops. After several days of continuous rain, the dirt roads leading to the fields are frequently a nightmare as they become extremely muddy, sticky, and saturated. It can be challenging for farm labourers to go on the roadways. Frequently, floodwaters could completely engulf some of the fields. The difficulties farmers encounter on an annual basis have an impact on agricultural productivity. Flooding affects field crops, livestock productivity, and ultimately food security in addition to farm employees. Governments at various levels in SSA are aware of the value of food security for their nations and communities, but they have not given the need to control flooding enough attention. Flooding causes significant harvest delays and crop destruction. Ideal growing conditions are necessary for crops to thrive. By excessively soaking the soil and lowering the oxygen content in the soil, too much water from heavy rains or overflowing rivers causes poor growth and low yield. Crop plants develop root infections in waterlogged soils. Crops that survive the flooding could also be infested with disease (NRCRI, 2004).

The rhizomes are planted and extensively consumed as a spice in foods and beverages because of their characteristics. Due to its economic benefits, ginger is one of the plants that is being promoted in the nation. The herbaceous perennial plant known as ginger (*Zingiberofficinale*) is a member of the *Scitamineae* order and *Zingiberaceae* family. It is a root crop and herb that is widely cultivated around the world for its aromatic underground stem, or

rhizome, which makes it an essential export good in international trade (NEPC, 1999; Erinle, 1989; Ajibade & Dauda, 2005).

Nigeria is ranked top in terms of the proportion of all ginger-growing hectares, but her share of global production is too small in comparison to other countries. The pharmaceutical, beverage, and confectionary sectors all benefit greatly from the usage of ginger rhizome as a raw ingredient. A combination of zingerone, shogaols, and gingerols, volatile oils that make about one to three percent of the weight of fresh ginger, are what give ginger rhizome its distinctive aroma and flavour. Ginger is a significant cash crop in Nigeria, one of the largest growers and exporters of the crop globally. China, Nigeria, India, Jamaica, and Brazil are currently the top five exporters of ginger. Around 429,481 hectares of land were utilized to grow ginger worldwide in 2007.

GINGER



Plate1: Rhizomes of Ginger (NRCRI, 2004).

Nigeria has the greatest area dedicated to ginger farming, which accounts for around 55% of the world's total (KADP, 2000). Ginger is a very valuable crop that is grown for both culinary and medicinal purposes. Most ginger rhizomes used for commerce are dried. The numerous varieties of ginger that are marketed include fresh ginger, dry ginger, bleached dry ginger, ginger powder, ginger oil, ginger oleoresin, gingerale, brined ginger, ginger beer, ginger wine, ginger squash, and ginger flakes, among others. Ginger comes in two common varieties: the land race, which has short rhizomes, and the hybrid, which has large rhizomes.

Garlic

Garlic is one of the most important herbs found in Nigeria known as garlic bulbs (*Allium sativum* L family Liliaceae) which is used more frequently than onion among cultivated Alliums. It is a crop used for spices that is related to onions. Alliaceae. It is a widely used health-improving supplement whose crop comprises of a vegetable shoot and an underground bulb. The amount of sulfur-containing chemicals in garlic is high. The main active ingredients in garlic are thiosulfates, which also include allicin. High concentrations of saponins, phosphorus, potassium, sulphur, and zinc are also present. A modest variety of vitamins A and C and selenium. Low levels of iron, manganese, calcium, magnesium, sodium, and B-complex vitamins.

Garlic Variety: Over seventy (70) sorts of garlic can be grouped into three fundamental types particularly: great headed varieties, soft neck varieties, and stiff neck varieties. Suitable varieties have to be carefully decided on after considering the preferred traits just like the time of maturity, yield and colouration among others.



Plate 2: Bulbs of Garlic (Adrian, 2016).

Turmeric

Turmeric rhizomes, the botanical name is *Curcuma Longa* Linn, and it comes from the same family as ginger (*Zingiberaceae*). The rhizomes are harvested every year some are used for propagation in the following season and some are used for consumption. A tropical perennial plant native to India and Indonesia, turmeric is grown in some tropical regions all over the world. It is one of the most essential spices and is used as a key component in cuisine all over the world. It is also known as the "golden spice of life." Between 11 and 16 tonnes of turmeric are produced worldwide each year, and these production numbers.

AIM and OBJECTIVES

Aim of the Study

The aim of the research work is to examine the challenges of commercial production of ginger, garlic and turmeric in Bayelsa and Rivers States of Niger Delta, Nigeria.



Plate 3: Rhizomes of Turmeric Olga Ricon (NRCRI, 2004).

Objectives of the Study

The objectives of the research work is to determine the difficulties in producing ginger, garlic, and turmeric for market in Nigeria's Rivers and Bayelsa States. In order to do this, the following goals are to:

- Determine the viability of cultivating ginger, garlic and turmeric in parts of Rivers and Bayelsa States of Nigeria.
- Assess the preservation process and marketing of ginger, garlic and turmeric in parts of Rivers and Bayelsa States of Nigeria.
- Assess if the climatic condition of the Rivers and Bayelsa States of Nigeria is favorable for the growing of these crops.

- Determine the various socio-economic challenges hindering the farming of the ginger, garlic and turmeric in Rivers and Bayelsa States of Nigeria.

MATERIALS AND METHODS

The many techniques and methods used to conduct the research are covered in this chapter. When a researcher administers and collects data for a research project, they are using specific approaches, methods, designs, and systems. These are referred to as their research methodology. The chapter discusses how to collect primary and secondary data for a research project. Additionally, it offers a concession in response to rational considerations for a problem-solving strategy. It outlines the steps taken to accomplish a research's goals and objectives. As a result, this chapter covers the methodology employed to carry out the investigation, as well as the data source, analytical tools, and study limitations. A multiple choice, closed-ended survey questionnaire was used in this study.

Techniques/Sampling Size

In some sections of Rivers and Bayelsa states, a selective sampling technique was used. utilizing a straightforward random sample approach to four (4) communities.

The Study Area

The study area involves parts of Rivers and Bayelsa states. Geographically Rivers and Bayelsa States are situated in Southern Nigeria. Figure 1a, below is a map of Rivers State, some selected areas were used for the questionnaire administration as well as Figure 1b, Map showing Bayelsa State.

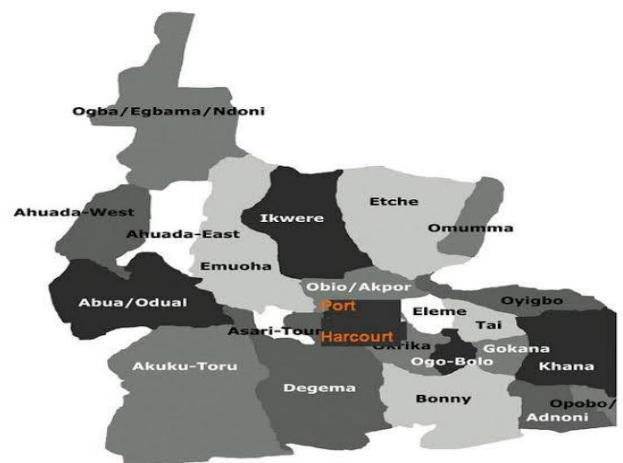


Fig. 1a: Map of Rivers State

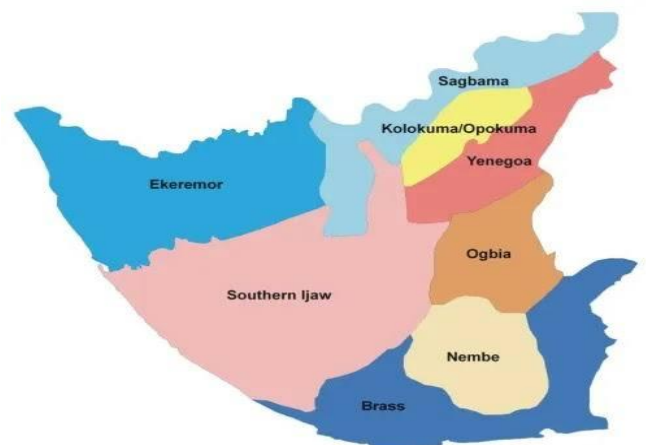


Fig. 1b: Map of Bayelsa State

RESULTS AND DISCUSSION

Results

Socio-Demographic Details of the Respondents

Table 1: Socio-Demographic Details of the Respondents

Variable	Frequency (N =	Percentage (%)
Ginger Respondents		
Gender of		
Male	40	46.5
Female	46	53.5
Educational Level		
Primary	18	20.9
Secondary	13	15.1
Tertiary	45	52.3
None	10	11.6
Garlic Respondents		
Gender of		
Male	40	45.9
Female	47	54.0
Educational Level		
Primary	17	19.5
Secondary	20	23.0
Tertiary	25	28.7
None	25	28.7
Total	87	
Turmeric Respondents		
Gender of		
Male	34	46.0
Female	40	54.0
Educational Level		
Primary	15	20.3
Secondary	15	20.3
Tertiary	24	32.4
None	20	27.0

Source: Researcher's field work, 2022

Table 2: The quantity harvested from the three crops

	How much quantity do you get from Ginger	How much quantity do you get from Turmeric	How much quantity do you get from Garlic
Valid	86	74	87
Mean	1.74699	1.86747	1.61972
50kg	35	28	34
100kg	34	38	30
1000kg	14	7	7

Source: Researcher's field work 2022

Table 3: Marketing strength of Ginger, Garlic and Turmeric in parts of Rivers and Bayelsa State

	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	34	39.5	39.5	39.5
No	39	45.3	45.3	84.9
Sometimes	13	15.1	15.1	100.0
Total	86	100.0	100.0	

	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	40	54.1	54.1	54.1
No	25	33.8	33.8	87.8
Sometimes	9	12.2	12.2	100.0
Total	74	100.0	100.0	

Source: Researcher's field work 2022

Table 4: Available Buyers for Turmeric Respondents

	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	50	57.5	57.5	57.5
No	35	40.2	40.2	97.7
Sometimes	2	2.3	2.3	100.0
Total	87	100.0	100.0	

Source: Researcher's field work 2022

Table 5: Available buyers for garlic respondents

	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	50	57.5	57.5	57.5
No	35	40.2	40.2	97.7
Sometimes	2	2.3	2.3	100.0
Total	87	100.0	100.0	

Source: Researcher's field work 2022

Table 1, demographic information on the respondents reveals that 61.5% of 95% of garlic farmers are female and 38.5% of 95% of male garlic farmers, while 53.5% of 95% of ginger farmers are female and 46.5% of 95% of male ginger farmers, 58.3% of 95% of turmeric farmers are female, and 41.7% of 95% of turmeric farmers are male. Based on observation, 52.3% of the 95% of ginger farmers have a college degree. 38.5% of 95% of the garlic farmer has tertiary education, followed by 48% of 95% of the turmeric farmer. The findings indicate that a sizable portion of those cultivating these crops are tertiary educated. Most of them practice less frequently because they are preoccupied with other activities and cannot give it their full attention. Table 2, shows that 34 persons out of the 86 people that planted ginger reported having ready buyers, while 39 persons says no ready buyers. And 13 persons say sometimes they have ready buyers while other times no ready buyers. Table 3, shows that 40 persons out of the 74 people says there are ready buyers, 25 persons says no ready buyers while 9 persons says sometimes. Table 4, shows that 50 respondents out of the 87 farmer of garlic say there are ready buyers, 35 says no ready buyer, while 2 persons says sometimes. Table 5, shows that 59.3% out of 95% uses sun dry to preserve the crop, 12.8% uses cool dry place to preserve the crop, while 27.9% dry and grind to powder to preserve it. Table 6, shows that 66.2% out of 95% uses sun dry to preserve, 9.5% uses cool dry place while 24.3% dry and grind to powder to preserve the crop. Table 7, shows that 72.4 % out of 95% uses sun dry to preserve the crop, 11.5% uses cool dry place to preserve, 16.1% says you dry and

grind to powder to preserve. Table 8, gives statistics of some suitable conditions for growing ginger. The conditions for southern Nigeria are compared against India and Northern Nigeria which also produces more than the Southern Nigeria. India is about the largest producing country of ginger in the world. It produced about 33% followed by China with 19%. Table 9, gives the statistical data of some suitable conditions for growing garlic. China is about the world largest producer of garlic with about 80% production. Following that Shandong in China is the world's largest producer of garlic the conditions for Southern Nigeria shall be compared against that of Shandong in China and Northern Nigeria where this crop thrives well. Using the Giovanni tools, it was discovered that the same conditions that makes garlic produced well in the Northern Nigeria and China is the same in the southern Nigeria. Hence the challenges are considered to be ignorance and lack of interest. Table 11, shows the statistical data of some suitable conditions for growing turmeric. India is about the world largest producer of turmeric; production is about 80%. The conditions of the Southern Nigeria shall be compared against those for Telangana in India and Northern Nigeria where this crop is produced in commercial quantities. From the table above we shall be considering their different conditions.

Discussion

The difficulties in producing ginger, garlic, and turmeric for commercial purposes in some areas of Bayelsa and Rivers States were found to be caused by farmers' ignorance of the viability of these products (Ezra et al., 2017; Nzekwe, 2016).

In comparison to Northern Nigeria, preservation of these crops is a little more difficult in these locations because it rains almost exclusively throughout the year (Mojisola, 2020). As a result, some adopt more expensive methods of preservation, such as ova drying in place of sun drying (Mahato, 2014).

Due to financial restrictions on acquiring hectares of land and equipment for mechanized systems of farming, farmers pay less attention to these crops (Amadi et al., 2017). Many people are reluctant to cultivate these crops in large quantities since it takes time and the work is monotonous (Olojede & Nwokocha, 2011).

The environmental characteristics of several locations where these crops are grown in considerable amounts were examined by observation using the Giovanni equipment. When compared to southern Nigeria (Rivers and Bayelsa), where these crops are produced in commercial quantities, the conditions for growing ginger, turmeric, and garlic are almost identical to each other. As a result, there are not many differences in the conditions ideal for growing ginger, garlic, and turmeric based on geographical location. Examples include India, China, and northern Nigeria, where these crops are produced in large quantities. Therefore, we can conclude that the difficulties in the commercial production of these crops in some parts of Rivers and Bayelsa States are primarily caused by farmers' ignorance of how profitable these crops can be to them, their lack of attention to these crops, and the difficulty in obtaining credit facilities to buy large amounts of farmland and machinery for mechanized farming because the labour required for the commercial production of ginger, garlic, and turmeric is tiresome and time-consuming (Mazza et al., 2019).

CONCLUSION AND RECOMMENDATIONS

Conclusion

The difficulties in producing ginger, garlic, and turmeric for commercial use in some areas of Rivers and Bayelsa State. The

difficulties in producing these crops commercially have a detrimental effect on the farmer's revenue. In low-income economies, such as those in Africa, the inability of farmers to grow these products in significant quantities lowers crop yields, lowers net farm revenues, and jeopardizes food security (FAO, 2007).

The principal mode of data gathering was heavily utilized by the researcher (questionnaire and interviews). The questionnaire method is supplemented with interviewing. The SPSS application was used to analyzed the results. This study set out to describe and examine the difficulties involved in growing ginger, garlic, and turmeric for commercial purposes in some of Rivers State and some of Bayelsa State. The researcher initially learned about the difficulties in the study area's commercial production of ginger, garlic, and turmeric. The study also showed that commercial production of ginger, garlic, and turmeric in the study locations is genuinely difficult, which has an adverse effect on farmers' revenue.

There are limitations of ignorance, the technical know-how of the farming system of these crops, preservation and storage facilities.

The challenges of commercial production of ginger, garlic and turmeric in the South- South (parts of Rivers State and Bayelsa State) are mostly because of the ignorance of farmers on the methodology and right strategies of growing, preserving and storing, bulbs and rhizomes of these crops. Another serious challenge is inaccessibility of farmers to loan and agricultural extension services for mechanized farming by the Governments and possibly NGO's (Non-Governmental Organizations). Flooding also may pose a major threat as these crops do not thrive well in waterlogged area.

Addressing these challenges would demand extensive training programmes, Governmental supports, and perhaps other non-governmental bodies like Co-operative Societies, etc. or even mergers to put resources together for massive production.

Recommendations

Considering the forgoing analysis, the research recommends the following:

- Extensive training programmes to be carried out by Agricultural Extension Agency (AEA) to help combat the challenges of ignorance of farmers on the viability of these crops.
- Government, NGO's and agricultural supportive bodies to institute systems that will provide loans and grants to encourage high productivities, as more resources will be accessible with the availability of funds and equipment.
- Government to both construct and deploy maintenance measures to prevent flooding on farmlands since waterlogged environments are not suitable for growing these crops.
- Government and Co-operative Societies to support the farmers in the acquisition or provision of large expanse of lands in hectares sufficient for the commercial production of these crops.
- Agricultural extension agencies to create conducive environments for public and private partnership to create innovation on new technologies that can enhance commercial production of ginger, garlic and turmeric.

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REFERENCES

1. Adrian, W. (2016). How to Plant and Grow Garlic in your Veggie Patch. <https://www.gardenerspath.com/plants/vegetables/growin-g-garlic>
2. Ajibade, L. K. & Dauda, Y. (2005). Ginger Plant; Ginger Extension Pamphlet. Bennard Ginger Company, Kafanchan, Nigeria.
3. Amadi, P., Charity, D. O. & Felix, N. (2017). Identifying the Potentials of Turmeric for Food Security in Nigeria.
4. Erinle, I. D. (1989). An Overview of Research on Ginger Productions in Northern State of Nigeria. Proceedings of the First National Ginger Workshop, Umudike, Nigeria, 89-93.
5. Ezra, D., Akinola, M. O., Banta, A. L., Makarau, S. B. & Hussaini, A. (2017). Socio-economic assessment of ginger production in Jaba Local Government Area of Kaduna State, Nigeria. *Asian Journal of Agricultural Extension, Economics and Sociology*, 15(2): 1-11.
6. Job, N. N. & Philemon, L. M. (2013). Efficiency of Ginger Production in Selected Local Government Areas of Kaduna State, Nigeria. *International Journal of Food and Agricultural Economics*, ISSN 2147-8988, Vol. 1, No. 2, pp. 39-52..
7. KADP, (Kaduna State Agricultural Development Project) (2000). Production of ginger: an extension guide. Kaduna State Agriculture Development Project, Kaduna. pp18.
8. Mazza, M., Ewuziem, J. E, Uwanda, Q. C. (2019). Factors affecting farmers' income generation from ginger production in Abia and Imo State Nigeria. *Canadian Journal of Agriculture and Crops*, Vol. 4, No. 2, 77-83, 2019, e-ISSN: 2518-6655.
9. Mahato, A. (2014). Climate Change and its Impact on Agriculture. *International Journal of Scientific and Research Publications*, Volume 4, Issue 4, April 2014.
10. Mojisola, (2020). The challenges and management of flooding in Africa's agriculture.
11. National Root Crops Research Institute (NRCRI, 2004). Production of ginger. Extension guide No.7. Zaria: National Agricultural Extension and Research Liason service, pp. 4-8.
12. NEPC, (Nigerian Export Promotion Council) (1999). Product Profile of Ginger. Nigerian Export Promotion Council B/K 312, Kumba St, Wuse, Zone 3, Abuja.
13. Nzekwe, C. S. (2016). Economics of ginger production in Ikwuano Local Government Area, Abia State, Nigeria.
14. Okonji, N. C. (2012). "Creating an enabling environment for increased agricultural production," in Proceeding of the 48th Annual Conf. of Agric. Society of Nigeria, pp. 69 – 74.
15. Nwaru, J. C., Onyenweaku, C E. & Nwagbo, E. C. (2013). "Rural credit market and resources use in arable crop production in Imo state of Nigeria," *Nigeria Agricultural Journal*, vol. 6, pp. 43 – 58.
16. Onyirioha, N. (2023). Meet Nigeria's Queen of Cassava Who Makes over N5bn Yearly. <https://www.legit.ng/business-economy/industry/1491994-yemisi-iranloye-meet-nigerias-queen-casava-12m-sales/>