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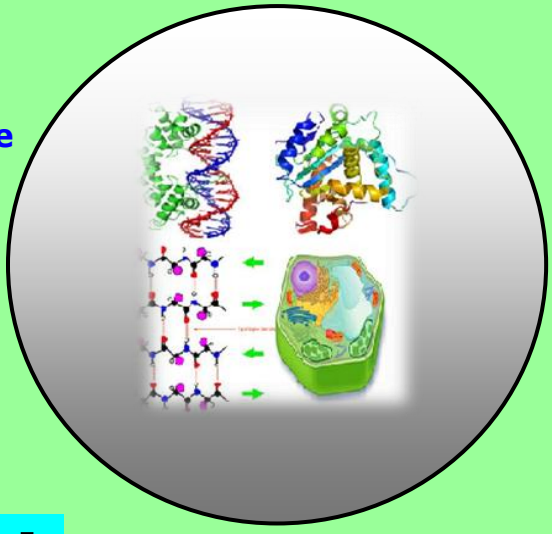
ISSN 2319-3077 Online/Electronic
ISSN 0970-4973 Print

Journal Impact Factor: 4.275
Global Impact factor of Journal: 0.876
Scientific Journals Impact Factor: 3.285
InfoBase Impact Factor: 2.93
Index Copernicus International Value
IC Value of Journal 47.86 Poland, Europe

J. Biol. Chem. Research
Volume 33 (1) 2016 Pages No. 206-213



Journal of Biological and Chemical Research

An International Peer Reviewed / Referred Journal of Life Sciences and Chemistry

Indexed, Abstracted and Cited in various International and National Scientific Databases

Published by Society for Advancement of Sciences®

J. Biol. Chem. Research. Vol. 33, No. 1: 206-213, 2016
(An International Peer Reviewed / Refereed Journal of Life Sciences and Chemistry)
Ms 32/2/160/2015

ISSN 0970-4973 (Print)
ISSN 2319-3077 (Online/Electronic)

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RESEARCH PAPER

Received: 13/11/2015 **Revised: 24/01/2016** **Accepted: 25/01/2016**

Producers' Perspective on the Medicinal, Nutritional and Economic Potentials of Spices in Nigeria

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ABSTRACT

The growth and sustainability of spices production is necessary in many developing nations to improve health and livelihood of the populace. The preference of the farmers involved in spices production was assessed with the aim of determining the relationship between the socio-economic characteristics of spice farmers and their net income and also to determine the producers' preference for these spices with respect to their economic, medicinal and nutritional importance. Data were generated through a survey of 87 farmers from Oyo, Edo, Akwa-Ibom, Kano and Katsina States via random sampling proportionate to size. Data were analysed using frequency, ranking and chi-square test.
Results revealed that a higher percentage of the male farmers (80.5%) dominated spices production with (43.7%) in the age range 50 years and above. A greater percentage (49.4%) had a family size of 6-10 people and also engaged them in the production process. About 47.1% of the farmers generated a meager 10% of their net income from spices production. Also, the most important medicinal, nutritional and economic spice as indicated by the farmers was onion. The chi-square test showed occupation, family size, household size on the farm and proportion of farm utilized for spices production as socio-economic variables influencing the percentage net income generated from spices. However, there is the need to sensitize farmers to be better involved in spices production while devoting more of their farm land to spices production giving particular attention to spices with high economic, nutritional and medicinal potentials.
Keywords: Producers' perspective, Economic, Medicinal, Nutritional, Spices and Chi-square.

INTRODUCTION

Spices and condiments are products of plants which are mostly used for seasoning, flavouring and thus enhancing the taste of foods, beverages and drugs. They may be in the form of dried seeds, fruits, roots, barks, leafs or vegetative used nutritionally in significant quantities as a food additive for the purpose of flavor, color or as a preservative that kills harmful bacteria or prevents their growth (Tsai *et al*., 2007; Gurib-Fakim, 2006; Krishna *et al*., 2009.

They relate to the natural, aromatic plant components or mixture thereof, used for flavouring, seasoning and imparting aroma or flavour to food. The basic forest of west and central Africa are rich in natural resources and have tremendous biodiversity (Olajide *et al*., 1999; Fasola, 2000) particularly in plants that provide food, ornamentals, spices and ingredients for medicine. Nigeria being inclusive is blessed with a rich ecosystem that has enormous potentials for production of both indigenous and exotic spices.

Interestingly most spices traded globally have their origin in Latin America or Asia especially India, China, Sri Lanka and Indonesia and overtime have been successfully grown in Nigeria. The total volume of spices produced globally has been increasing gradually since 1998, and it is estimated that supplies will continue to increase more each year. There was a global increase of 4.7, 4.8 and 4.9 million tons in 1998, 1999 and 2000, respectively. The biggest volume of spice comes from India. In 2000, India produced 2.3 million tons of spice, an increase from 2.2 and 2.1 million tons respectively in 1998 and 1999. China is the second biggest spice producer, showing an increase in productivity each year (FAO, 2005).

In Nigeria however, production of spices was estimated at 146,500 tons in 2000 while available FAO statistics for 2008, put spices production at 377,500 tons on the average.

The demand for spices in the world has been increasing awareness on their multifarious uses. They play a major role in many of the industries, and are used in perfumery, soaps, incense, as dyes in histology and in various acts (Onyesom and Okoh, 2006).

In Nigeria, some spices have been used as insecticides, Anyaele and Amusan (2003) used hexamolic extract of Dennettia tripetala to control larvae of Aedes aegypti. Also, the antioxidant activity of Nigerian spices has been reported by Odukoya et al. (2005). Amongst the spices (exotic and indigenous) surveyed, some are grown across the geographical zones of the country with most traded and cultivated spices grown in the savannah regions of Northern zones where large scale irrigated farming takes place, these spices include pepper, ginger and onions. The unique but lesser known spices are found mainly in the forest belt of southern zones. Spices are traded in different forms such as whole, essential oils, powdered form or variety of mixtures. It is also a good source of income for the farmers.

However, because these spices are high value commodities that can make a substantial impact on the economic status of farmers, it therefore becomes imperative to undertake a study geared towards encouraging the rural farmers to move from the subsistence level of spice production to a commercial scale in order to harness the economic, medicinal and nutritional potentials of these spices.

The objectives of this study were to; determine the socio-economic characteristics of the spice farmers, to assess the relationship between their socio-economic characteristics and percentage net income and to determine producers' preference for these spices with respect to their economic, medicinal and nutritional importance respectively.

MATERIAL AND METHODS

The study was carried out in three ecological zones of Nigeria; the South-Southern, South Western and North-Western Nigeria. The states surveyed included Edo, Akwa-Ibom, Oyo, Kano and Katsina states respectively. Primary data were distributed to hundred (100) randomly selected farmers for the baseline study with the aid of a semi-structured questionnaire accessing information on their socio-economic status, percentage of crops cultivated as spices, total net income from spices produced and the farmer's perception about spices with respect to the economic, medicinal and nutritional importance. However, only eighty seven (87) questionnaires were found useful for the analysis due to incomplete information provided by the respondents.

Table 1. Distribution of Respondents by Personal and Socio-Economic Characteristics.

Variables	*Frequency*	*Percentages*
AGE		
30 – 39	**13**	**14.9**
40 – 49	**36**	**41.4**
>=50	**38**	**43.7**
Total	**87**	**100.0**
GENDER		
Male	**70**	**80.5**
Female	**17**	**19.5**
Total	**87**	**100.0**
OCCUPATION		
Farming	**61**	**70.1**
Trading	**10**	**11.5**
Salary earner	**12**	**13.8**
None	**4**	**4.6**
Total	**87**	**100.0**
FAMILY SIZE		
0 – 5	**21**	**24.1**
6 -10	**43**	**49.4**
11 – 15	**7**	**8.0**
16 -20	**4**	**4.6**
>20	**12**	**13.8**
Total	**87**	**100.0**
EDUCATION		
None	**10**	**11.5**
Quaranic	**16**	**18.4**
Adult literacy	**10**	**11.5**
Primary	**24**	**27.6**
Secondary	**16**	**18.4**
Tertiary	**11**	**12.6**
Total	**87**	**100.0**

Respondents were requested to rate eleven (11) spices (Onions, garlic, ginger, basil lemongrass, ***Affframomum, parkia biglobossa, tetrapleura, xylopia monodora*** and ***piper guineensis*** on a 3-point scale based on their economic, medicinal and nutritional importance as "very important" = 3, "important" = 2 and "not important" = 1. This however resulted in maximum important score of 33 and minimum of 11 for an individual farmer. The rating of each spice was achieved by adding the important scores of all the farmers for that particular spice. This resulted in a maximum score of 261 and minimum of 87. The spices were then ranked based on their scores. The spice with maximum score was regarded as most important and ranked 1 while the spice with minimum score was regarded as least important and ranked 10. Data were analysed using descriptive (frequency counts, percentages) and inferential (chi square) statistics to determine the relationship between socio-economic characteristics of the respondents' vis-à-vis their percentage net income from spices.

RESULTS

Socio-economic characteristics

The socio-economic characteristics of the respondents are as shown in Table 1 below. About, 43% of the respondents were 50years and above with most (80%) being male farmers. Seventy percent of the respondents were involved in farming and 49.4% had a family size of between 6 and 10 members. A larger part of the respondents (49.4%) engaged about 6-10 members of their household in the production process. It was also deduced from the study that about 88.5% of the respondents were literate while 47.1% of the farmers generated 10% of their net income from spices production

Economic Importance of Spices

The ranking of 11 spices as shown in Table 2 according to their economic relevance to the farmers revealed that (47.1%) of the farmers rated onions as very important to them economically, while all the farmers (100%) signified ***affframomum melegueta*** as not having any appreciable economic importance.

Table 2. Economic importance of spices in Nigeria (n=87).

S/No.	Spices	Very Important	Important	Not Important	Important Score	Ranks
1.	Onions	41 (47.1)	25 (28.7)	21 (24.1)	194	1
2.	Garlic	18 (20.7)	13 (14.9)	56 (64.4)	136	2
3.	Ginger	7(8.0)	24 (27.6)	56 (64.4)	125	5
4.	Basil	4 (4.6)	3 (3.4)	80 (92.0)	98	8.5
5.	Lemon grass	5 (5.7)	18 (20.7)	64 (73.6)	115	6
6.	Aframomum	-	-	87 (100)	87	11
7.	Parkia	20 (23.0)	7 (8.0)	60 (69.0)	134	3
8.	Tetrapleura	1 (1.1)	9(10.3)	77 (88.5)	98	8.5
9.	Xylopia	2 (2.3)	8 (9.2)	77 (88.5)	99	7
10.	Monodora	-	9 (10.3	78 (89.7)	96	10
11.	Piper	14 (16.1)	18 (20.7)	55 (63.2)	133	4

**figure in parenthesis are percentages*

Medicinal Importance of Spices

The result in Table 3 revealed that 26.4% of the farmers regarded onions as very important to them medicinally while 35.6% regarded onions as just important and 37.9% rated onions as not having any medicinal importance.

Table 3. Medicinal Importance of Spices in Nigeria (n=87).

S/No.	Spices	Very Important	Important	Not Important	Important Score	Ranks
1.	Onions	23 (26.4)	31 (35.6)	33 (37.9)	164	1
2.	Garlic	30 (34.5)	6 (6.9)	51 (58.6)	153	2
3.	Ginger	22 (25.3)	15 (17.2)	50(57.5)	146	3
4.	Basil	5(5.7)	6.69)	76(87.4)	103	8
5.	Lemon grass	27 (31.0)	4 (4.6)	56(64.4)	145	4
6.	Affframomun	-	-	87 (10)	87	10
7.	Parkia	9 (10.3)	8 (9.2)	70 (80.5)	113	6
8.	Tetrapleura	7 (8.0)	1 (1.1)	79 (90.8)	102	8.5
9.	Xylopia	9 (10.3)	3 (3.4)	75(86.2)	108	7
10.	Monodora	5 (5.7)	5 (5.7)	77 (88.5)	102	8.5
11.	Piper	24 (27.6)	1 (1.1)	62(71.3)	136	5

**figure in parenthesis are percentages*

Nutritional Importance of Spices

As shown in Table 4, (44.8%) of the farmers rated onions as very important nutritionally and this was followed closely by ***parkia biglobossa*** (26.4%) while one hundred percent (100%) regarded ***affframomum melegueta*** as not important to them nutritionally.

Table 4. Nutritional Importance of fruits in Nigeria (n=87).

S/No.	Spices	Very Important	Important	Not Important	Important Score	Ranks
1.	Onions	39 (44.8)	18(20.7))	30 (34.5)	183	1
2.	Garlic	18 (20.7)	10(13.8)	57(65.5)	135	3
3.	Ginger	15 (17.2)	16(18.4)	56(64.4)	133	4
4.	Basil	4(4.6)	5(5.7)	78(89.7)	100	7.5
5.	Lemon grass	4(4.6)	10(11.5)	73(83.9)	105	6
6.	Affframomum	-	-	87(100)	87	10
7.	Parkia	23(26.4)	5(5.7)	59(67.8)	138	2
8.	Tetrapleura	1(1.1)	9(10.3)	77(88.5)	98	9.5
9.	Xylopia	2(2.3)	9(10.3)	76(87.4)	100	7.5
10.	Monodora	1(1.1)	9(10.3)	77(88.5)	98	9.5
11.	Piper	12(13.8)	11(12.6)	64 (73.6)	122	5

**figure in parenthesis are percentages*

Socio-Economic Characteristics of Spice Farmers and the Percentage Net Income

The result from Table 5 revealed that age, sex and level of education of the respondents were not significant factors that influence the percentage net income of the spice farmers while occupation, family size, no. of household on the farm and proportion of farm utilized for spices were significant variables affecting percentage net income from spices.

Table 5. Chi-Square test showing the Relationship between Socio-Economic Characteristics of Spice Farmers and their Percentage Net Income.

Variables	X^2	df	CC	P-value	Decision
Age	**15.20**	**8**	**0.39**	**0.06**	**NS**
Sex	**3.11**	**4**	**0.19**	**0.54**	**NS**
Occupation	**48.11**	**12**	**0.60**	**0.00**	**S**
Family size	**29.70**	**16**	**0.50**	**0.02**	**S**
No. of h/hold on the farm	**34.94**	**16**	**0.54**	**0.04**	**S**
Education	**29.72**	**20**	**0.51**	**0.08**	**NS**
Proportion of farm utilized for spices	**80.77**	**16**	**0.69**	**0.00**	**S**

Significant at 5% level CC = Contingency Coefficient df = degree of freedom S = Significant NS = Not Significant

DISCUSSION

Socio-economic Characteristics

The results in Table 1 showed clearly that more males than females were involved in the production of spices in Nigeria. This depicts that spices production in Nigeria is male dominated and this is expected as women are more into processing and marketing of agricultural produce. Married respondents were also more than their single counterpart. This could be because their farm enterprise(s) can generate enough cash flow to sustain their families owing to the fact that they have more financial commitments.

Furthermore, most of the farmers were literate with either formal or informal education, thereby enhancing the mobilization strategies for greater production among them. The meager revenue generated from spices production showed that agricultural income among small holder farmers are generally low (Oluwasola and Alimi 2008) and awareness on spices production and the potentials inherent in its cultivation is lacking among most farmers in Nigeria.

Economic, Medicinal and Nutritional Importance of Spices

As shown in Table 2, a large proportion of the farmers had a very good perspective of the economic potentials of onions which could be due to that the spice is used by most households in Nigeria on a daily basis. However affframomum melegueta was rated on a very low perspective. The five most important spices economically among the farmers were arranged in order of priority as onions, garlic, ***parkia biglobossa***, ***piper guineensis*** and ginger. The result as shown in Table 3 revealed that ***Affframomum melegueta*** was also ranked least medicinally. This could be due to the low awareness on the health properties of this spice when compared to other spices. The five most important spices medicinally among the farmers are arranged in order of priority as onions, garlic, ginger, lemon grass and ***piper guineensis***. On the nutritional perspective of spices, onions were also rated as spice with highest nutritional content with ***affframomum melegueta*** still ranking lowest in nutritional perspective. The five topmost spices of nutritional importance among the farmers were arranged in the order of priority as onions, ***parkia biglobossa***, garlic, ginger and ***piper guineensis***.

Socio-Economic Characteristics of Spice Farmers and the Percentage Net Income

This however suggests that the occupation of the farmers which basically was farming had a positive influence on their percentage net income. Also, from the analysis the family size and no. of household on the farm was quite meager thereby resulting in low income generated from spices aimed at boosting

The proportion of farm utilized for spice production generally was low (10%) resulting in a low percentage net income from spices. Hence, the higher the crops cultivated as spices on the farms the higher the net income and vice-versa. There is therefore the need to boost agricultural production and improve the family economic need.

CONCLUSION AND RECOMMENDATION

From the study, it was concluded that most of the respondents were adult male farmers who were mostly semi-literates. Spice crops were planted on a small scale to adequately cater for individual or household demand.

A large proportion of the farmers (47.1%) rated onions as very important to them economically, while (26.4%) rated onions as very important to them medicinally and (44.8%) ranked onions as very important to them nutritionally. ***Affframomum melegueta*** was regarded by the farmers as the spice with the least economic, medicinal and nutritional importance. The result of the chi-square test revealed that occupation, family size no. of household on the farm and proportion of farm utilized for spices were significant factors that influenced the percentage net income of the respondents either positively or negatively.

It is therefore recommended that an awareness campaign be carried out on the need for farmers to be involved in the cultivation of spices for their economic, medicinal and most importantly nutritional benefits.

ACKNOWLEDGEMENTS

The management of National Horticultural Research Institute is appreciated for providing the fund and the enabling environment for this research work. Also, the scientists and support staff who worked tirelessly to make this work a success are also appreciated.

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