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Constraints to the Organic Production of Spices and Vegetables in Ekiti State, Nigeria

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Abstract
Organic agriculture is fast emerging as the only sustainable long-term approach to food production. Several farmers in Ekiti State have been exposed to organic methods and practices in the production of spices and vegetables. However, the level of their organic farming practices is still below expectation. This study was designed to assess the constraints inhibiting the farmers' organic production of spices and vegetables practices in Ekiti State, Nigeria. A multistage sampling technique was used to select 150 respondents. Descriptive statistics and factor analysis were used to present results of research findings. The study revealed that 58.7% of the respondents were female while 77.9% were married. A total73.2% of the farmers had more than 5 year-of experience in spices and vegetable farming while 72% of them produced *Amaranthus* spp. Some of the constraints identified include; population pressure on land (0.628), effects of urbanization (0.78), unfavourable land tenure system (0.802), market availability (0.922), inadequate access to credit facilities (0.894) and farmers/herders' conflicts (0.887). The study concluded that credits should be made available to farmers at low-interest rates to address the financial related problems. Also, a good proportion of fertile agricultural land may be designated for organic spices and vegetable production to eliminate farmers/herders conflicts.

Keywords: Organic farming, Spices and vegetables, Resource conflict, Environmentally-friendly.

Les défis liés à la production biologique d'épices et de légumes dans l'État d'Ekiti, au Nigeria

Résumé
L'agriculture biologique devient de plus en plus la seule approche durable à long terme a la production alimentaire. Plusieurs agriculteurs de l'État d'Ekiti ont été exposés à des méthodes et pratiques biologiques dans la production d'épices et de légumes. Cependant, le niveau de leurs pratiques d'agriculture biologique est encore en deçà des attentes. Cette étude a été menée dans le but d'évaluer les défis qui entravent les pratiques de production biologique d'épices et de légumes des agriculteurs dans l'État d'Ekiti, au Nigeria. Une technique d'échantillonnage à plusieurs degrés a été utilisée pour sélectionner 150 répondants. Des statistiques descriptives et une analyse factorielle ont été utilisées pour présenter les résultats des recherches. L'étude a révélé que 58,7% des répondants étaient des femmes tandis que 77,9% étaient mariés. Au total, 73,2 % des agriculteurs avaient plus de 5 ans d'expérience dans la culture des épices et des légumes, tandis que

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72 % d'entre eux produisent Amaranthus spp. Certains des défis identifiées comprennent; pression démographique sur les terres (0,628), effets de l'urbanisation (0,78), régime foncier défavorable (0,802), disponibilité du marché (0,922), accès insuffisant aux facilités de crédit (0,894) et conflits agriculteurs/éleveurs (0,887). L'étude a conclu que des crédits devraient être mis à la disposition des agriculteurs à des taux d'intérêt bas pour résoudre les problèmes financiers connexes. En outre, une bonne proportion de terres agricoles fertiles peut être désignée pour la production d'épices et de légumes biologiques afin d'éliminer les conflits entre agriculteurs et éleveurs.

Mots-clés : Agriculture biologique, Épices et légumes, Conflit de ressources, Respectueux de l'environnement.

Introduction

Organic agriculture is fast emerging as the only sustainable long-term approach to food production. Its emphasis on recycling techniques, biodiversity, low external input and high-level output strategies make it an ideal replacement for the petroleum-intensive agricultural methods that are currently contributing to global warming, which the conventional method represents and with a high possibility of increasing with time (International Federation of Organic Agriculture Movement, IFOAM, 2009). It has been observed that the conventional method of agricultural practices has done more harm than good to human health, soil organisms, aquatic animals and water bodies as a whole. Organic method holds the promise to reduce or eradicate these hazards over long period of production.

Organic agriculture has been defined as a production system that sustains the health of soils, ecosystems and people. It relies on ecological processes, biodiversity and cycles adapted to local conditions, rather than the use of inputs with adverse effects. Organic Agriculture combines tradition, innovation and science to benefit the shared environment and promote fair relationships and good quality of life for all involved. It helps to ensure the conservation of the diverse genetic pool of landraces needed for modern plant breeding (IFOAM, 2007).

Spices and vegetables constitute the major or the only source of food in between harvests or when the harvest fails. They provide a critical source of energy and protein, especially for adults, the sick and the elderly. Leafy vegetables like *amaranthus, celosia, cochorus* and *telfaria can* be handy under emergency circumstances and hardships arising out of civil conflicts and natural disorders that result in the displacement of communities. Some of these vegetables are produced within a short time after the onset of the rainy season and can be harvested in three to four weeks after planting (Dilrukshi, Russell & Karim, 2013). The worlds' demand for organically produced foods is growing rapidly in developed and developing countries which influence a higher demand for organic spices and vegetables hence spices and vegetables are very essential part of food and beverage. Consumers now prefer organic spices and vegetables over conventional ones as part of their healthy diet, such that many convenience food manufacturing companies have started using organic spices and vegetables in their food as value addition and to make products differentiated from their competitors (Dimelu & Odo, 2013).

However, with the high proficiency of spices and vegetables being in large market demand, and for this demand to be met; farmers need to be well informed on the appropriate practices in organic farming in the production of spices and vegetables for higher and more efficient productivity. Organic production techniques must ensure that adequate supplies of organic fertilizers compensate for the extracted nutrients by crops, otherwise, the production method could go on for a few years, but unsustainable in the medium to long term. The provision of adequate fertilization is especially relevant in regions with poor soils. In addition, the application of adequate quantities of organic fertilizers of the required quality may face several constraints, including their scarcity in the region, high cost or alternative uses, i.e., as fuel for household cooking. These potential problems should be identified to determine the feasibility of organic agriculture, and corrective measures implemented if possible. This study was therefore designed to identify possible

constraints inhibiting the practice of organic production of spices and vegetables in Ekiti State, Nigeria.

Objectives of the study

The main objective of this study was to examine the constraints faced by farmers in the organic production of spices and vegetables in Ekiti State, Nigeria. Specific objectives include:

1. To describe the socio-economic characteristics of spices and vegetable farmers in Ekiti State.
2. To identify types of organic spices and vegetables cultivated by farmers in Ekiti State.
3. To examine the constraints inhibiting organic production of spices and vegetables in Ekiti State.

Methodology

The study was carried out in Ekiti State, Nigeria. The population for the study includes all registered organic spices and vegetable farmers in Ekiti State (registered with Rural Development Project, Justice Development and Peace Initiative Catholic Diocese of Ekiti (RDP). A three-stage sampling technique was used to select the respondents. The first stage involved the purposive selection of Ekiti State because the State has the highest number of registered organic spices and vegetable producers in southwest Nigeria. In the second stage, all the three senatorial districts were also purposively selected because organic production of spices and vegetables is popular in these areas. The third stage involved a proportionate random selection of respondents from the list of registered farmers.

A structured interview schedule was used to elicit information from the farmers. The analytical techniques used were descriptive statistics (like frequency and percentage) and factor analysis.

To ascertain the knowledge level of organic farmers, they were asked to state how sure they were about some knowledge test statements on organic agriculture.

A 5-point Likert scale was used to determine the perception of farmers to the organic production of spices and vegetables. They were asked to respond Strongly Agree (SA), Agree (A), Undecided (U), Disagree (D), or Strongly Disagree (SD) to some perception statements on organic agriculture. The severity of constraints inhibiting the organic production of spices and vegetables was measured using a 3-point Likert type scale of "Very Serious Constraint" "Somewhat Serious Constraint" and "Not a Serious Constraint".

Results and Discussion

Socio-economic characteristics of respondents

More than half (58.7%) of the respondents were females while only 41.3% were male. This shows that organic production of spices and vegetables in Ekiti State was dominated by females. This is in line with the work of Busari (2012) which explains that the majority of vegetable farmers in Nigeria were women. Spices and vegetable production are of short duration and involve less drudgery compared with arable crops production which is male-dominated.

Many (77.9%) of the farmers were married which could be beneficial whereby the children and wife could serve as means of help to reduce the cost of labour. About one-third (34.5%) of the respondents completed their primary education while a few (2.7%) acquired adult education and 18.9% had no formal education. Moreover, 24.3% and 19.6% of the respondents acquired secondary and tertiary education respectively. This indicates that the farmers associated with the production of spices and vegetables

Table 1: Proportionate random selection of respondents

Senatorial district	Population of registered organic vegetables and spice farmers	Sampled proportion (39.79%)
Ekiti south	112	44
Ekiti central	178	70
Ekiti north	87	36
Total	377	150

Source: Field Survey, 2020

have a fair level of formal education. This is in line with the fact that organic farming, as a unique technology, is expected to attract more educated farmers and requires farmers to attend training to acquire skills as observed by Agro Eco and Grolink (2008).

Almost half (42%) of the respondents had a household size between 6 and 10 while 34.67% had a household size of between 1 and 5. Only 23.3% had a household size of between 11 and 15 and the average household size was 6. This shows that the farmers involved in organic spices and vegetables production have moderately large households. Household members could also assist with production activities on the farm although, not all the time, since the children are expected to be in school available farm labour can influence farm size and production level of spices and vegetables. Over 73% of the respondents had organic agriculture as their primary occupation while 26.8% had other sources of income. This shows that spices and vegetable production is a reliable enterprise as a means of livelihood.

Over 85% had more than five years experience in organic agriculture while 14.2% had less than five years experience in organic agriculture and 72.3% of the respondents had more than five years experience in organic production of spices and vegetables and 27.7% have less than five years experience. This shows that majority of the farmers involved in organic agriculture in the study area were experienced. The farmers have been introduced to organic production of spices and vegetables for quite some years which enabled them to gain the necessary skills and knowledge in the practice. This was against findings of Demiryurek and Ceyhan (2008) and Jans and Cornejo (2001) who found organic farmers to be

Table 2: Socioeconomic characteristics of respondents

S/N	Variable	Classes	Frequency	Percentage
1	Gender	Male	62	41.3
		Female	88	58.7
2	Marital status	Single	13	8.7
		Married	116	77.3
		Divorced	2	1.3
		Widowed	13	8.7
		Separated	6	4
3	Education	No formal	28	18.7
		Adult education	6	4
		Primary	51	34
		Secondary	36	24
		Tertiary	29	19.3
4	Household size	1-5	52	34.7
		6-10	63	42
		11-15	35	23.3
5	Primary occupation	Organic agriculture	110	73.3
		Others	40	26.7
6	Years of experience in organic agriculture	<5 years	23	15.3
		≥ 5 years	127	84.7
7	Years of experience in organic spices and vegetable production	< 5 years	42	28
		≥ 5 years	108	72
8	Member of association	Yes	140	93.3
		No	10	6.7
9	Types of association	Cooperative	4	2.7
		Religious	1	0.7
		Farmers group	145	96.7

Source: Field Survey, 2020

new entrants in farming with less experience but with higher education of post-secondary level compared to conventional farmers who have more experience and lower education level. The number of years of experience is an indication that the information elicited from them will be reliable for policy and programme planning.

Over 93% of the respondents belonged to an association while only 6.7% were not members of any association. This tendency to group networking among the respondents indicates that the farmers involved in spices and vegetable' production associate with others. This could be exploited for information sharing, bulk purchase of inputs such as seeds and organic fertilizers, and cooperative farming for capital formation for loan facilities.

Spices/Vegetables Produced

Figure 1 shows that the most organically produced spice/vegetable in the study area was *Amaranthus* (72%) which was followed by *Cochorus* and *Celosia* with 71.3% and 60.7% respectively. This was followed by tomatoes and waterleaf with 59.3% each. The least produced vegetables were cucumber and garlic with 12% and 5.3% of the respondents respectively.

Constraints Hindering the Practice of Organic Production of Spices and Vegetables

The result of factor analysis yielded three main constraints inhibiting organic production of spices and vegetables in the study area. These constraints include; urbanization, financial related and resource-conflict factors.

Population pressure on land (0.628), effects of urbanization (0.78), unfavourable land tenure system (0.802) all have large positive loadings on factor 1 (urbanization). Therefore, these factors contribute to urbanization-related problems to organic spices and vegetable production in the study area. This is in line with the assertion of Jayne, Chamberlin & Headey (2014) that land tenure and barriers related to land availability are constraints to agricultural intensification.

Furthermore, market availability (0.922) and inadequate credit facilities (0.894) have large positive loadings on factor 2 (finance-related factors). These factors therefore, determine finance-related problems in the study area.

Similarly, inadequate farmland (0.699) and farmers/herders' conflict (0.887) have large positive loading on factor 3 (resource-conflict). These factors

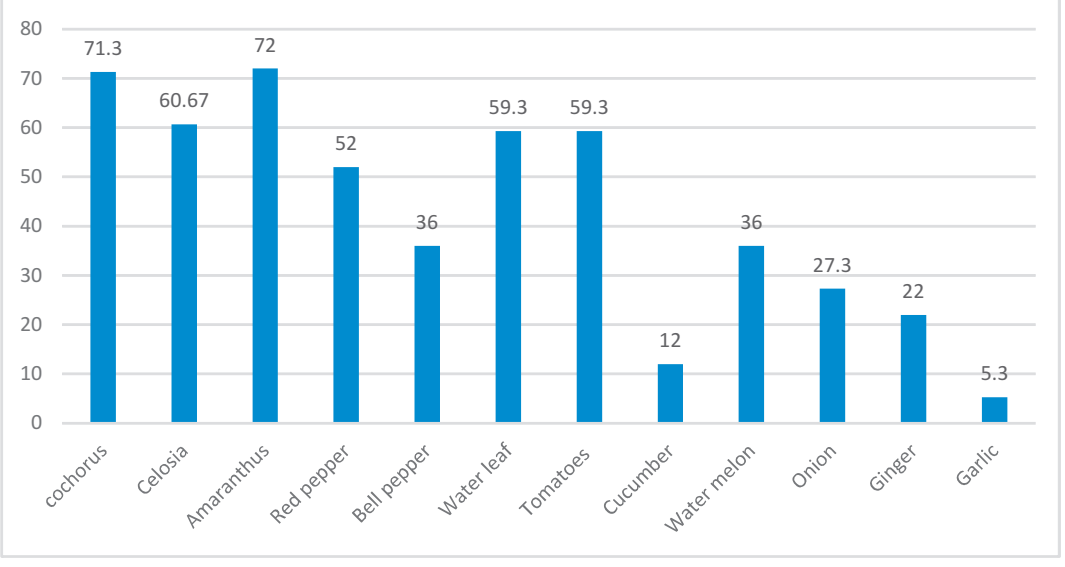


Figure 1: Distribution of respondents by types of organic spices and vegetables produced
Source: Field Survey, 2020

Table 3: Factor analysis showing constraints inhibiting the practices of organic production of spices and vegetables

S/N	Constraints	Components		
		Population pressure	**Effects of urbanization**	**Unfavourable land tenure system**
1	Population pressure on land	0.628*	-0.043	0.139
2	Effects of urbanization	0.782*	-0.104	0.293
3	Lack of knowledge on organic agriculture	0.793	-0.106	-0.251
4	Inadequate farmland	0.215	0.083	0.699*
5	Inadequate credit facilities	0.019	0.894*	0.104
6	Unfavorable land tenure system	0.802	-0.159	-0.085
7	Inadequate supply of organic manure	0.585	0.262	0.330
8	Inadequate information and education	0.696	-0.168	0.298
9	Market availability	-0.032	0.922*	-0.026
10	Farmers-herders conflict	-0.128	0.155	0.887*

Source: Field Survey, 2020

determined resource conflicts in the study area. The impact of these results shows that adequate planning measures should be put in place to control these constraints and their effects on organic production of spices and vegetables.

Farmers with more stable, secure land tenure will have a much greater incentive to make the required investments in land conservation measures such as reduction of burning before planting, introduction of crop rotation methods and soil conservation measures and the conservation of natural forests. Organic farmers also need good markets for their products to make up for higher investments, to enhance the quality of production. They need to have good capital outlay to ensure timely farm operations which require financial investment and availability of adequate credit facilities.

The problem of farmers/herders' conflict has resulted in serious losses to crop farmers and this could be disastrous to organic production of spices and vegetables if not properly handled.

Conclusion and Recommendations

The outcome of this research work shows that farmers in Ekiti State are involved in organic production of spices and vegetables. The majority of them belong to various groups and associations which could be beneficial for information sharing and cooperative activities. The farmers were however faced with some inhibiting factors such as finance-related factors, the problem of urbanization and the problem of resource-conflicts.

The following recommendations were made based on the findings of this study:

1. There should be the availability of credit facilities at low-interest rate for farmers to address the financial related problems.
2. A good proportion of fertile agricultural land may be designated for organic spices and vegetable production to eliminate farmers/herders' conflicts.
3. Better conflict management practices should also be employed to curb resource-conflict-related problems.

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