



Trends, Prospects and Challenges in Development of Organic Agriculture in West Africa

A. O. Onoja

Department of Agricultural Economics and Extension, University of Port Harcourt
Nigeria.

E-mail: anthony.onoja@uniport.edu.ng

ARTICLE INFO

ABSTRACT

Key Words

Food Security,

Organic food,

GMOs,

Farming Systems

Agricultural Development

The study was designed to review the status, prospects and challenges in West African organic agriculture. Specifically, it Charted and described the trend in organic agriculture in West Africa; identified the prospects of organic agriculture for West Africa; highlighted the policies on ground in West African countries to promote the growth of organic farming and then identified and discussed the major challenges constraining the successful adoption and expansion of organic agriculture in West Africa. The study utilized mainly secondary data obtained from FAOSTAT database to conduct the empirical review especially the trend analysis, while extensive literature review was conducted in order to attain other objectives of the study. It was found that, Africa had the least total area under organic agriculture management with 1.6% share. From 2005 -2015 Ghana, Burkina Faso and Togo had the highest average agricultural area used in organic agriculture in West Africa. However, between 2006 to 2015 Togo, Senegal and Mali were leading. The prospects for developing organic farming value chain was found to be high. The organic farms had the major advantages of providing export opportunities to earn foreign exchange, improve farmers' incomes, food security and overall livelihoods in West Africa. However, eight major challenges hindering the growth of organic farming were identified and discussed. Based on the findings seven recommendations were made including the need for policy development on organic farming, funding of organic farming, capacity building of farmers, building farmers' resilience against climate change effects among others.

Introduction

FAO estimated that 233 million people in sub-Saharan Africa were hungry/undernourished in 2014-16 (Hunger Notes, 2016). Globally, 795 million people were hungry, the report added. Sub-Saharan Africa was the area with the second largest number of hungry people, as Asia had 512 million, principally due to the much larger population of Asia when compared to sub-Saharan Africa (SSA). Unfortunately, least progress toward reducing hunger in the region had been recorded (Hunger Notes, 2016). This is more worrisome when one notes that SSA is a region where more than one in every four people remain undernourished. This is also the highest prevalence of any region in the world, the report added. However, the prevalence of undernourishment in the region declined from 33.2 percent in 1990-92 to 23.2 percent in 2014-16 even though the number of undernourished people has actually increased slightly. In the region too, 47 percent of the population, i.e. about half a billion people lived on \$1.90 a day or less in 2012, a principal factor adduced as the major cause of the widespread hunger (World Bank, Sub-Saharan

Africa Poverty and Equity Data as cited in Hunger Notes, 2016). According to Dalberg and Open Society Initiative for West Africa (OSIWA) (No date), "West African population, estimated at over 300 million in 2010 and more than a quarter of Africa's population, is expected to double by 2050". Feeding this population will pose a great challenge. The task also remains a desideratum if the Sustainable Development Goal 2 which is to "end hunger, achieve food security and improved nutrition, and promote sustainable agriculture" have to be achieved. Achieving the task will also be a positive response to the Comprehensive African Accelerated Development Plan (CAADP) plan as enshrined in the Malabo Declaration of 2014 (Africa Agriculture Status Report, 2016). According to the Africa Agriculture Status Report 2016 (Ulimwengu, Collins, and Yeboah, no date) the continent is still faced with many challenges such as food insecurity, emerging effects of climate change and rampant land degradation make these challenges especially daunting particularly as rapid population growth and rising urbanization increase the pressure on



agriculture to deliver more and better food. However, each of these challenges also represents an opportunity to strengthen agriculture, turning it into a multiplier of inclusive economic growth, the report noted. Fortunately, organic agriculture is showing itself to be a viable sustainable development option for Africa, noted Parrott, Ssekyewa, Makunike and Ntambi (no date).

According to IFOAM International (2018) "Organic Agriculture is 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 a good quality of life for all involved."

Roychowdhry (2013) opined that the most widely acceptable definition of Organic agriculture is "a holistic production management system which promotes and enhances agro-ecosystem health, including biodiversity, biological cycles, and soil biological activity". The system applies the use of management practices in preference to the use of off-farm inputs, taking into account that regional conditions require locally adapted systems, they added.

Parot et al (no date) noted that adopting organic agriculture should not be connoted as "a return to some form of low technology, backward or traditional agriculture – but involves pursuing a blend of innovations originating from a participatory intervention involving scientists and farmers." The organic farming system emphasizes management (M) over technology (T) and biological relations (BR) and natural processes (NP) over chemically intensive methods (CIM) (IFOAM, 2004). Organic farming in Africa, they noted, "must be viewed beyond the perspective of providing commodities for the global market. Rather it should be seen as an agricultural system that enhances' and 'manages' the complexity of the ecosystem rather than reducing and simplifying the biophysical interactions on which agricultural production depends. Twarog and Kapoor (2004) noted that it consciously integrates and takes advantage of naturally occurring beneficial interactions and the rich layers of indigenous knowledge. In recent years some policy makers and donors have started to recognize the potential of export oriented organic agriculture as a means of generating foreign exchange and increasing incomes. Yet the broader benefits of organic farming and agroecology in terms of enhancing food security, environmental sustainability and social inclusion and

reducing exposure to toxic pesticides often go unrecognized or are simply ignored. Furthermore, promoters of modern technologies, such as GMOs, view Africa as a virgin and receptive market. These technologies are being enticingly packaged and sold to African States as modernizing agricultural development programs (Paul and Steinbrecher, 2003). However, with the growth of the Organic Agriculture sub-sector, these packages are being more carefully scrutinized by some African states, some of who are rejecting them. Bouagnimbeck (2011) noted that despite the multi-functional benefits of organic agriculture in Africa, it receives little or no support from African governments and it is "generally not integrated into agriculture, climate change adaptation and poverty reduction policies. Instead, industrial and GMO agriculture are promoted over affordable and sustainable practices." Besides, the Food and Agricultural Organization, FAO (2018) noted that Ten years after the Economic Community of West African States launched its policy on food and agriculture, challenges abound and that "several regional initiatives compete with each other at the political and the project levels, in a complex and fragmented institutional context". There is therefore a need to provide evidence from more illuminating studies as this for policy making in West African (and African) organic agriculture development. It is against this background that this study was designed to assess the status, prospects and challenges of organic agriculture in West Africa.

Aims and Objectives of the study

The aim of this study is to review the status, prospects and challenges in West African organic agriculture. Specifically, the study:

- i) charted and described the trend in organic agriculture in West Africa
- ii) explored the possible opportunities inherent in organic agriculture for West Africa.
- iii) reviewed policies in West African countries aimed at promoting the growth of organic farming; and iii) identified the challenges constraining successful adoption and expansion of organic agriculture in West Africa.

2.0 Trends of Organic Agriculture in West Africa

The Economic Community of West African States is made up of the following countries: Benin, Burkina Faso, Cape-Verde, Côte d'Ivoire, the Gambia, Ghana, Guinea, Guinea Bissau, Liberia, Mali, Niger, Nigeria, Sierra Leone, Senegal and Togo). According to Willer



and Yussef (2005) organic agriculture has witnessed a worldwide rapid development and currently being adopted in over 110 countries. Its share of agricultural land and farms are on the upward ascent. Besides, uncertified organic farming is practiced even more in most

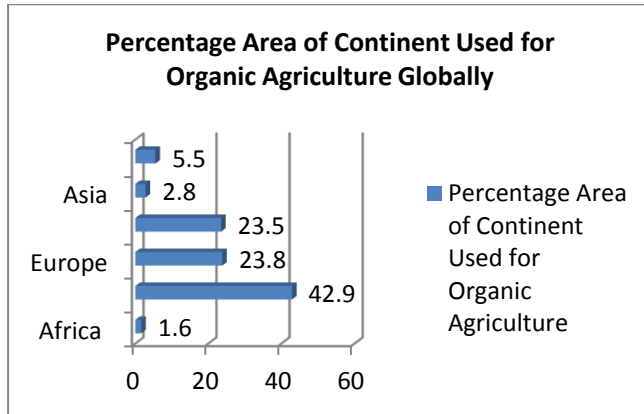


Figure 1. Rank of the World's largest continents' shares of land used for Organic Agriculture. Source: Willer and Yussef (2005).

countries of the world, added Willer and Yussef (2005). According to this report, in Africa organic agriculture is rarely certified. It further added that Africa had the least total area under organic agriculture management with 1.6% share of the continental land under organic farming. This contrasts far with the global highest share which comes from Oceania (42.9%), Europe (23.8%) and Latin America (23.5%). These are followed by North America (5.5%) and Asia (2.8%). No African country is listed among the ten largest organic agriculture ranked in Willer and Yussef (2005). The big ten, according to the report includes, in descending ranks are: Austria, Argentina, Italy, USA, Brazil, Uruguay, Germany, Spain, UK and Chile. See Figure 1.

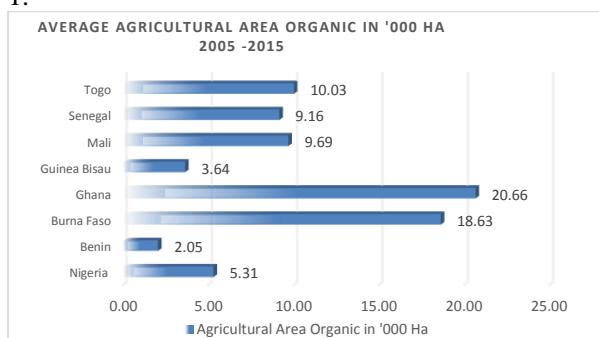


Figure 2: Average Agricultural Area allotted to Organic Agriculture in West Africa in '000 Ha from 2005 -2015. Source: Computed by authors from FAOSTAT, 2018

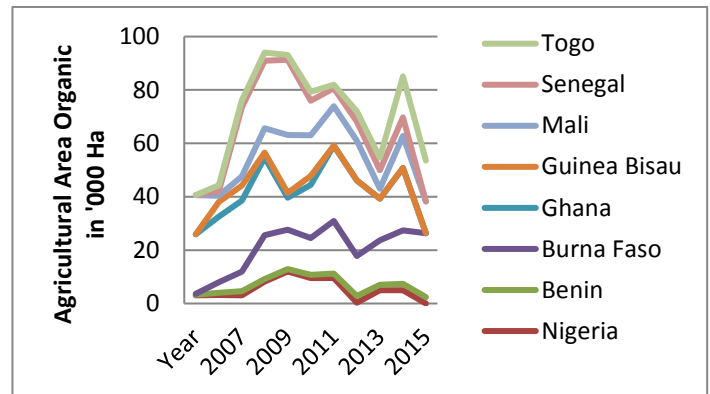


Figure 3: Trend of Area used in organic farming in West African region from 2006 to 2015. Source: Computed by authors from FAOSTAT, 2018

As indicated in Figure 2, the three top countries that have allotted more of their land area to organic farming (in descending order are Togo, Senegal and Mali. Nigeria, with the largest agricultural land area among them all trailed behind occupying the 7th position in the region. Quoting FAO, the International Centre for Research in Organic Food Systems, ICROFS (2010) noted that at 2000, the overall, total land used for organic agriculture in West Africa was 733 359 000 ha of land. Out of this, 50 568 ha was under organic agricultural production, observed Willer and Kilcher (2009). This is 0.007 percent of the total land in the region and corroborates the low status of organic agriculture activities in West Africa, which mainly focus on vegetables, fruits and fibre products. In 2008, the major operators observed by ICROFS were private sector business firms while most governmental organizations provided little or no support to the development of organic agriculture.

3.0 Opportunities inherent in organic agriculture for West Africa

Agriculture plays a key role in the Economic Community of West African States (ECOWAS). As the backbone of the economy, it affects society at many levels since national economies and people's jobs, incomes and food security depend upon it. In economic terms, this sector accounts for up to 35 percent of the region's Gross Domestic Product. Agricultural exports constitute an important element of West Africa's foreign trade, generating around six billion dollars, or 16.3 percent of all the products and services exported from the region. This agricultural export capacity brings in some of the foreign currency governments needed to pay for imported consumer goods, capital equipment and intermediate goods for industry and services. In terms of



jobs, it is still the biggest employer, with over 60 percent of the active population in the ECOWAS region engaged in agriculture, even though it pays less than other economic sectors.

ECOWAS (No date) further note that agriculture remained a vital factor in efforts to combat poverty and food insecurity in the region. Farming household build their strategies around internal consumption, while city dwellers (who now account for more than half of the region's population) obtain virtually all their food from local markets. It indicated that, 80 percent of the regional population's food needs were met by regional produce, but over the next few years West African agriculture will have to meet a huge increase in demand generated by demographic growth. the population of the region currently stands at 290 million, and is set to exceed 400 million by 2020 and 500 million by 2030. Finally, agriculture plays a key role in land management, soil fertility, natural resource management and environmental protection.

One of the major prospects in organic agriculture for West Africa and other African countries lies in the trade opportunities it presents. especially export market penetration. This prospect was confirmed by ICROFS (2010) who noted that the demand for organic products in high value food markets in Europe and North America had risen by 10-25% annually and had remained the fastest growing food market segment, with an increasing import from developing countries.

The second most important prospect of organic agriculture in West Africa still came from the ICROFS' report which demonstrated the prospect of developing Organic value chains in West Africa. The report cited the experience of Helvetas, an organization promoting organic value chains in West Africa. According to this source, in 2002, Helvetas provided cotton grower organizations with supports in Mali and later in Burkina Faso, Senegal and Benin in converting to organic production systems and to access organic and fair-trade markets. By 2009, s 14,000 certified smallholder farms took part in these programmes.

Pineau (2009) as cited in the ICROFS' report noted that an impact assessment study in Burkina Faso concluded that conversion to organic farming improved farmers' incomes, food security and overall livelihoods. Apart from cotton, rotation crops and associated crops such as sesame, shea, hibiscus, pulses and fonio were produced organically and sold in domestic and international markets. In addition, Helvetas supported organic fruit production, processing and marketing in Mali (mango) and Benin (pineapple). All these imply that there is a

future hope for commercializing organic agriculture and penetrating the export markets in West Africa in the near future beyond its present level.

The United Nations Conference on Trade and Development (UNCTAD) and United Nations Environment Programme (UNEP) (2008) indicated that organic agriculture possess ample potentials of increasing agricultural productivity and equally increase in farmers' incomes with low cost, locally available and appropriate technology without causing environmental damage. Further, the report provided evidence that organic agriculture is able to build up natural resources, strengthen communities and improve human capacity to cope with environmental challenges, thus improving food security by addressing many different causal factors simultaneously. Other benefits identified by AdeOluwa (no date) include "conserving water in semi-arid areas and combating desertification, to debt reduction for farmers, strengthening of social systems and maximization of environmental services."

According to AdeOluwa (no date) findings from a FAO project to encourage the export of organic and/or fair-trade produce from Central and West Africa to Europe from 2005-2009 gave a very promising result. A major finding of the project, according to AdeOluwa was that "the implementation of the organic methods generally resulted in an increase in labour costs and a decrease in the costs related to the purchasing of agrochemicals. Group marketing reduced the transportation costs of the products to the market. Regarding the variations in the living conditions at the start of the project, it can generally be concluded that the poorer the producers, the more the project's impact manifested itself in terms of poverty alleviation and food security."

Already, some major organic value chains in West Africa has been documented (ICROFS, no date). These include Organic cotton (in Benin, Burkina, Mali and Senegal), Organic fresh and dried pineapple (in Benin, Ghana), Organic shea butter (in Burkina, Mali), Organic Sesame is grain and oil (in Mali, Burkina, Senegal), Organic coffee in Togo and organic cocoa in Ghana. It was noted that the experience from West Africa proves that "the organic sector is still to become more market integrated" (ICROFS, 2010).

According to UNCTAD (2016), studies from across Africa hinted that export and domestically-oriented organic farming could contribute to increasing the income and livelihood conditions of smallholders. The report further which focused on export-oriented organic cotton, fruits and vegetable production found



that these productions opened new and financially rewarding market opportunities, which boosted the income and livelihoods of smallholder farmers (Jermann, 2011; Mamuya, 2011 as cited in UNCTAD, 2016). In another vein, summarizing other multiple research findings, UNCTAD (2016) concluded that the income of contractually linked export oriented organic producers could be consistently higher than that of conventional, spot market dependent farmers.

ECOWAS (2016) noted that ECOWAS is a 15-member regional group with a mandate of promoting economic integration in all fields of activity of the constituting countries in West Africa. Member countries of ECOWAS include: Benin, Burkina Faso, Cape Verde, Cote d' Ivoire, The Gambia, Ghana, Guinea, Guinea Bissau, Liberia, Mali, Niger, Nigeria, Sierra Leone, Senegal and Togo. Considered one of the pillars of the African Economic Community, ECOWAS was set up to foster the ideal of collective self-sufficiency for its member states. As a trading union, it is also meant to create a single, large trading bloc through economic cooperation. Integrated economic activities as envisaged in the area revolve around but are not limited to industry, transport, telecommunications, energy, agriculture, natural resources, commerce, monetary and financial issues, social as well as cultural matters." According to ECOWAS (no date) the ECOWAS region is an area of huge, under-exploited potential, with abundant natural resources (cultivable land and surface and underground water resources) and highly diverse ecosystems suitable for many different kinds of animal and plant production.

4.0 Policy Responses to Boost Organic Agriculture in West Africa

UNCTAD (2016) noted that the objective of promoting the development of organic farming was ratified by African Heads of State and Government in 2011 in a gazette dubbed the African Union Decision EX.CL/Dec.621XVIII. Furthermore, UNCTAD noted that at the 3rd African Organic Agriculture Conference (AOC) held in Lagos, Nigeria, West Africa, in October, 2015, organic farmers, entrepreneurs, researchers and representatives from national and international institutions, all reiterated the need for effective funding solutions to foster the development of African organic farming. Stakeholders present worried about dearth of information and available options regarding access to finance. The subsequent adoption of the Lagos declaration at the AOC called for at least 10 percent of public resources devoted to the agricultural sector to be specifically employed to develop OA in the continent (UNCTAD, 2015b). This has led to a renewed emphasis

on the need for suitable funding solutions to further develop the OA sector.

The efforts of ECOWAS to spur agricultural and industrial economic development in West Africa have led to the formulation of two major regional policies. According to OSIWA and Dalberg (no date). In the agricultural sector, the central policy of the ECOWAS is the Agricultural Policy in West Africa, known as "ECOWAP," which was adopted in 2005 as an instrument for the implementation of the Comprehensive Africa Agriculture Development Program (CAADP) 24 launched throughout the continent. This process includes actions to be implemented at regional and national levels. At the regional level, the ECOWAS Commission has developed the Regional Agricultural Investment Plan (RAIP), approved by the member states in 2010. The plan includes specific activities such as the establishment of the Regional Fund for Agriculture and Food, the ECOWAS Agricultural Information System (ECOAGRIS), and the Regional Food Security

Reserves. The RAIP focuses on three specific objectives: (i) the promotion of strategic products for food sovereignty, (ii) the promotion of an economic environment favourable to regional agricultural development, and (iii) the reduction of food vulnerability and the promotion of sustainable access to food. The resources required to fully fund RAIP regional 25 programs amount to roughly 900 million USD.

5.0 Challenges facing Organic Agriculture Development in West Africa

(i) Poor information and awareness of organic farming
UNCTAD (2016) noted that at the 3rd African Organic Agriculture Conference (AOC) held in Lagos, Nigeria, West Africa, the Stakeholders present expressed their worry about dearth of information and available options regarding access to finance. For instance, Kutama et al (2013) observed that many farmers in Nigeria had only "vague ideas about organic farming and its advantages as against the conventional farming methods. Use of biofertilizers and bio-pesticides requires awareness and willingness on the part of the farming community. Knowledge about the availability and usefulness of supplementary nutrients to enrich the soil is also vital to increase productivity. Farmers lack knowledge of compost making using the modern techniques and also its application." According to Bouagnimbec (2011) the "lack of an official organic agriculture data collection in many African countries makes it difficult to obtain reliable information on the extent of certified organic production." He noted that apart from Tunisia, Algeria, Morocco and Egypt where their governments collated



the data, in other African countries, data related to organic agriculture in Africa were collected by private sector organizations, "such as national organic umbrella organizations and certification bodies." From another perspective, Bello (2008) noted that the problem of lack of clarity in what constitute organic farming was still there. He stressed that: " Consumers were not always sure about what was really covered by organic farming, and the restrictions it implied. The reasons for the confusion lay, among other things, in the existence of a number of different 'schools' or philosophies, the lack of harmonized terminology, the nonstandard presentation of products and the tendency to blur the distinctions between concepts such as organic, natural, whole some and so on. The situation was worsened by cases of fraudulent use of labeling referring to organic methods."

(ii) Poor farm productivity

The problem of low productivity in West African agriculture is a major barrier to the growth of organic farming in West Africa too. According to ECOWAS (no date) agriculture in the region is characterised by low productivity and plagued by major environmental constraints. A 25% drop in rainfall over the last fifty years had impacted significantly on dry land farming in West Africa. The yields for most crops in West Africa remain among the poorest in the world, only increasing by an average of 42% between 1980 and 2005 and accounting for just 30% of the increase in agricultural and food production. The three basic farm production inputs, seed, fertiliser and agricultural machinery barely featured in most producers' operations, noted ECOWAS. The uptake of research on agronomic diversity had been very poor and fruitless to them as it often favoured vertical approaches that take insufficient account of the global nature and complexity of production and agrarian systems. To worsen the situation, it was also observed that over the decades, increases in production were mainly dependent on land area under cultivation expansion, "with a 229% increase in farmland accounting for 70% of the growth in regional production" (ECOWAS, no date).

(iii) Poor investment in agriculture, political apathy towards agriculture and instability

It has been observed by ECOWAS (no date) and Kutama et al (2013) that governments, international institutions and the donor community's declining investment in agriculture was a major setback to development of agriculture which also bites the growth of organic farming in West Africa. With market liberalization in the context of structural adjustment within the region, agricultural sector could not get the

support that would have ensured food security for local populations and equipped it to resist unfair competition from international markets. Agricultural policy tools were mainly directed at commercially profitable cash crops production "rather than the support needed to achieve its objectives of food security, rural employment and integration into the regional market. Several countries in the region have become accustomed to relying on cheap imported produce to feed their people." (ECOWAS, no date). Besides, political instability and conflicts too have their own negative effects on farming generally in the West African region where activities of Boko Haram and other militant agitators in Nigerian Niger Delta region affects the stability of agricultural production in the region.

(iv) Challenges of meeting up with export demands

According to Paul (2011) demand for organic products is very high in the developed countries of the west like United State of America (USA), Japan and the European Union (EU) and Japan. US consumers, maintained Paul (2011) are ready to pay a premium price of 60 to 100% for the organic products. The wealthy class in Nigeria, Africa's most populous country are also joining this trend. Kutama et al (2013) noted that, unfortunately the demand for organic products is growing rapidly in many of the world markets while the supply in Nigeria and indeed other African countries are unable to match it.

(v) Poor policy frameworks to boost organic farming

In most West African countries, there are no clearly defined policy frameworks that documents the strategies for boosting the development of organic agriculture. For instance, Parrot and Marsden (2002), observed that in Nigeria, State governments had no organic agriculture policies nor a credible mechanism to implement them. There were only four agencies for accreditation and their expertise is limited to fruits and vegetables, tea, coffee and spices. The certifying agencies were inadequate, the recognized green markets were not existing, and the trade channels were not formed neither the infrastructure.

(vi) High cost of factor inputs for organic farming

The cost of production in organic farming are often very high more especially in maintaining high standards required by the export markets. For instance, Bello (2008) observed that "the reason why prices are higher for organic foods, reflect many of the costs as conventional foods in term of growing, harvesting, transportation and storage. According to Bello (2008), "organically produced foods must meet strict regulations (certification), and intensive management and this why the farming is mostly done on a smaller scale. He also noted that organic farming was still battling with the



problem of higher labour input in its operation.

(vii) Inadequate Access to finance

Despite the prospects of a growing market and a positive evolution of price premiums on organic produce, recent studies have affirmed that OA stakeholders are faced with the challenge of insufficient access to funding, particularly in strategic areas such as certification, producer organization, research, and the purchase of equipment (UNCTAD, 2016). UNCTAD noted that limited credit guarantee mechanisms and insufficient capacity of commercial banks to integrate the specificities of organic agriculture constitute some hindrances to the ability of OA stakeholders to finance their activities in Africa.

(viii) Environmental challenges

Ulimwengu, Collins, and Yeboah, (no date) noted rightly that all SSA countries including West African region is still faced with emerging effects of climate change and rampant land degradation. Organic farming success therefore will partly depend on the ability of the farmers to build strong resilience that will enable them adapt to the challenge of climate change risks and its attendant problems such as flooding, desert encroachment and low productivity.

Conclusion

The study reviewed the status, prospects and challenges in West African organic agriculture. Specifically, it Charted and described the trend in organic agriculture in West Africa; identified the prospects of organic agriculture for West Africa; highlighted the policies on ground in West African countries to promote the growth of organic farming and then identified and discussed the major challenges constraining the successful adoption and expansion of organic agriculture in West Africa. Using mainly secondary data obtained from FAOSTAT database the trend analysis was charted, while extensive literature review was conducted in order to attain other objectives of the study. It was found that, African countries generally lagged behind other parts of the world in organic agriculture. The top countries engaged in organic agriculture in West Africa include Ghana, Burkina Faso, Mali and Togo. Given the rich prospects for developing organic farming value chain in the region, there will be need to focus on developing policies to boost organic farming. This is more so as most countries in the region had no well-crafted policy frameworks on ground to help boost or develop organic agriculture. The performance of organic agriculture was also threatened by so many challenges ranging from poor information and awareness of organic farming;

declining productivity of organic farms; poor investment in agriculture, political instability and apathy against organic agriculture development; poor policy frameworks to boost organic farming; high cost of factor inputs (especially labour) for organic farming; poor access to farm finance to increase in environmental degradation.

Based on the foregoing findings the following recommendations were made:

i) Efforts should be made by various stakeholders in food security and agriculture in West Africa to popularize organic farming.

ii) Organic farmers in West African countries should be given trade incentives to enable them penetrate the export markets. These can be achieved at the regional and country levels by ECOWAS and the Ministries of Trade in the countries respectively.

iii) Farmers capacities should be developed through organization of workshops and training programmes that will enable the farmers better understand the best technology to apply in organic farming. This will enable them compete internationally and also improve their productivity.

iv) Development Assistance from international donors, ECOWAS and the various countries governments should prioritize funding of organic farmers to improve their access to finance.

v) The Economic Community of West African States (ECOWAS) should mandate her member countries to develop national policies on the development of organic farming. In a similar way, development partners in West Africa should help promote their host countries policies that will be geared towards promotion of organic farming.

vi) Government of West African countries should consider provision of subsidies on certain agricultural inputs such as improved naturally selected seeds and machineries that will facilitate the farm production of organic foods.

vii) Governments of West Africa and ECOWAS will need to prioritize building of resilience of farmers against the menace of climate change especially desertification and flood control.



REFERENCES

- AdeOluwa, O.O. (no date). Organic agriculture and fair trade in West Africa. Retrieved on 20.07/2018 from <http://www.fao.org/docrep/014/i2230e/i2230e11.pdf>
- Bello, W. B. (2008) Problems and prospect of organic farming in developing countries. *Ethiopian Journal of Environmental Studies and Management*. 1(1): 36-43.
- Bouagnimbeck, H. (2011) Africa: Overview. Organic Farming in Africa, In : Willer, H. and Kilcher, L. (Eds.) (2011): *The World of Organic Agriculture. Statistics and Emerging Trends 2011*. IFOAM, Bonn, & FiBL, Frick.
- Dalberg and Open Society Initiative for West Africa (OSIWA) (No date) Review of ECOWAS Policies in the Agricultural and Industrial Sectors. OSIWA, Dakar. Retrieved on 24/08/2018 from <http://www.osiwa.org/publication/review-of-ecowas-policies-in-the-agricultural-and-industrial-sectors/>
- Economic Community of West Africa ECOWAS (no date). Regional Agricultural Policy for West Africa: ECOWAP. Make agriculture the lever of regional integration. Dakar: ECOWAS.
- ECOWAS (2016) Basic information. Retrieved on 12/08/2018 from <http://www.ecowas.int/about-ecowas/basic-information/>
- Food and Agricultural Organization, FAO (2018). Family Farming Knowledge Platform: ECOWAP: A Fragmented Policy . Retrieved on 24/08/2018 from <http://www.fao.org/family-farming/detail/en/c/411514/>
- Hunger Notes (2016) Africa Hunger Facts. Retrieved on 21/08/2018 from <https://www.worldhunger.org/africa-hunger-poverty-facts/>
- International Centre for Research in Organic Food Systems ICROFS (2010) How organic agriculture contributes to economic development in Africa: Market-driven development of organic high value chains. ICROFS fact sheet- Results from research in economic development No. 4.
- IFOAM International (2018) Organic agriculture: Our definition. Retrieved on 23/08/2018 from <https://www.ifoam.bio/en/organic-landmarks/definition-organic-agriculture>
- Kutama, A.S., Abdullahi, M. A., Umar, S. , Binta, U.B & Ahmad, M.K (2013) Organic farming in Nigeria: problems and future prospects. *Global Advanced Research Journal of Agricultural Science* . 2(10) : 256-262. Retrieved on 2/08.2018 from <http://garj.org/garjas/index.htm>
- Parrott, N & Elzakker B. V. (2003): Organic and like-minded movements in Africa. International Federation of Organic Agriculture Movements IFOAM. Tholey-Theley, (Germany). Download www.ifoam.org/igo/africa_survey.pdf
- Parrott, N., Ssekyewa, C., Makunike, C. & Ntambi, S. M. (no date). Organic Farming in Africa, Archived at <http://www.orgprints.org/5161>
- Parrot, N. & Marsden, T. (2002) The real Green Revolution: Organic and Agroecological farming in the London: Green peace *Environment Trust*. 1-6.
- Paul J (2011). Nanometer in food and agriculture: The big and small matter for organic food and farming. Proceedings, of third scientific conference of ISO FAR (International Society of Organic Agriculture Research), 28 September-1 October, Nanyang; Korea, 2;96-99.
- Roychowdhury, R., Gawwad, M. A. R., Banerjee, R, Bishnu, S & Tah, J. (2013) Status, trends and prospects of organic farming in India: a review. *Journal of Plant Biology Research* 2013, 2(2): 38-48. Retrieved on 23/08/2018 from <http://www.inast.org/jpbr.html>
- Ulimwengu, J., Collins, J & Yeboah, F. (no date). Africa's Emerging Agricultural Transformation: Evidence, Opportunities and Challenges. In *Africa Agriculture Status Report 2016 : Progress towards Agricultural Transformation in Africa*.
- United Nations Conference on Trade and Development, UNCTAD (2016) Financing Organic Agriculture in Africa: Mapping the issue. UNCTAD/WEB/DITC/TED/2016/6 United Nations Publication.
- UNCTAD & UNEP (2008) Organic agriculture and food security in Africa. UNEP-UNCTAD Capacity-building Task Force on Trade, Environment and Development. United Nations, New York and Geneva.
- Willer, H. & Kilcher, L. (eds.) (2009). *The world of organic agriculture – Statistics and emerging trends 2009*. IFOAM, Bonn, FiBL, Frick and ITC, Geneva.
- Willer, H. & Yussef (2005). *The world of Organic Agriculture: Statistics and emerging trends*. International Federation of Organic Agriculture



Movement IFOAM: Bonn, Germany.
retrieved on 12.08/2018 from
[http://www.cofemersimir.gob.mx/expediente/
4193/mir/14702/anexo/519940](http://www.cofemersimir.gob.mx/expediente/4193/mir/14702/anexo/519940)

