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Review

Organic farming in Nigeria: problems and future prospects

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Organic farming is a practice of the cultivation of crops and rearing of animals without the use of any synthetic farm inputs such as fertilizer, pesticides and the likes but by the use of traditional inputs such as green manure, compost manure, crop rotation, and other cultural practices to eliminate pest and manage diseases. Several researches in organic farming was carried out in the developing countries recently, there is still a need for similar but extensive research on organic farming in Nigeria in order to promote, develop and encourage organic farming among the farmers of our country. Organic farming is being constrained by several factors in Nigeria and which if critically looked into, could be solved with little efforts. The benefits of organic farming reside on the farmers, our ecosystem and man's health. In line with this development therefore, Governments should formulate appropriate agricultural policies to promote and encourage organic agriculture, by providing support for the marketing of the organic products for both export and local consumption as this would greatly encourage the local organic farmers and consequently increase the output of organic farm produce which would eventually ensure food security in the country. This article reviews the problems and future prospects of organic farming in Nigeria.

Keywords: organic farming, problems, prospects, Nigeria

INTRODUCTION

According to the Directorate General for Agriculture and Rural Development for the European Commission (2009), Organic farming can broadly be defined as the form of agriculture that relies on techniques such as crop rotation, green manure, compost and biological pest control, and mechanical cultivation to maintain soil productivity and

control pests, excluding the use of synthetic fertilizers and synthetic pesticides, plant growth regulators, livestock feed additives and genetically modified organisms. In other words, organic farming uses fertilizers and pesticides but excludes or strictly limits the use of manufactured (synthetic) fertilizers, pesticides (which include herbicides, insecticides and fungicides), plant growth regulators such as hormones, livestock antibiotics, food additives, genetically modified organisms. It is the production system that sustains the health of soils, ecosystem and people, by

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relying on ecological processes, biodiversity and cycles adapted to local conditions. It combines tradition, innovation and science for the benefit of the environment and good quality of life (international federation of organic agriculture movement). It is an integrated farming system that strives for a high level of longevity or sustainability to ensure an adequate food supply for future generations (Paul, 2011). Organic farming began with a group of agricultural scientists and farmers, and later expanded to become a major source of food for many consumers. Initially, organic farmers were reacting to the industrialization of agriculture, which consumers were largely unaware of. It was not until the contrasts between organics and industrial farming became overwhelming that organics began capturing the attention of consumers. Organic farming originated in England according to the theories developed by Albert Howard in his *Agricultural Testament* in 1940 following the work of Rodale in late 1930s in United States (<http://www.organic-world.net>). However, the inception of the concept is in line with traditional farming come into focus in the early 70's when concerted effort began on soil characteristics. Agboola(1970) concluded that in organic farming, soil organic matter is significantly correlated with cat ion exchange capacity, and all available nutrients especially N, P, K, Mg, S, Zn, and Cu in soils of South-Western Nigeria. A number of controversies exist on the importance of organic farming. The notion that organic agricultural system is more friendly to the environment and more sustainable than high yielding farming system has been contested upon by many workers (Samuel, 2007). However, organic farming remains tiny considering the total percentage agricultural output (Paul, 2011).

This article reviews the problems and future prospects of organic farming in Nigeria.

Historical Background of Organic Farming in Nigeria

Nigeria has over 160 million persons making it the most populous country in Africa. The country mainstay before the oil boom was essentially Agriculture (Abdullahi and Kutama, 2012). The country is blessed with both natural and human resources. There is a huge oil deposit in the Niger Delta region. This has both economic and adverse effect on the environment and the nation as whole. There are several cases of oil spillage, gas flaring, water, land and air pollution. The Niger Deltans whose major occupation is predominantly fish farming could not continue with their profession. The natural aquaculture habitat has been polluted. Hence, the country depends on importation of frozen fish to balance the fish demand. Deforestation is going on heavily in some major part of the country, where trees were the major source of cooking and production of charcoal (Parrot and Marsden, 2002).

Organic agriculture is still young in the country, with less than fifteen years of practical existence (Abdullahi and Kutama, 2012). As at 2007, Nigeria had 3, 154 hectares under organic agriculture, of which 50 ha were fully converted (Willer and Kilcher, 2009). Practitioners are still few despite the great potential for organic agriculture. The following are the main stakeholders:

- Dara/ Eurobridge Farm.
- Organic Agriculture Project in Tertiary Institutions in Nigeria (OAPTIN)
- Olusegun Obasanjo Centre for Organic Agriculture Research and Development (OOCORD),
- Nigerian Organic Agriculture Network (NOAN),
- Organic Farmers Association of Nigeria,
- Organic Fertilizer Association of Nigeria,
- World Wide Opportunities on Organic Farms (WWOOF),

These were the few organizations that were promoting organic farming practice in Nigeria.

Problems of Organic Farming in Nigeria

1. Lack of Awareness

It is a fact that many farmers in the country have only vague ideas about organic farming and its advantages as against the conventional farming methods. Use of bio-fertilizers 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. The maximum they do is making a pit and fill it with small quantities of wastes. Often the pit is flooded with rainwater and result is the top of the compost remains under composted the bottom becomes like a hard cake. Proper training to the farmers will be necessary to make vermi-compost on the modern lines.

2. Output Marketing Problems

Organic farmers reported that marketing and distribution are difficult obstacle, concentrating in only developed countries (cnn, 2008; Magkoset al., 2006). It is found that before the beginning of the cultivation of organic crops, their marketability and that too at a premium over the conventional produce has to be assured. Organic food was initially therefore credence good. One has to get certification before his good is sold. Inability to obtain a premium price, at

Least during the period required to achieve the productivity levels of the conventional crop will be a setback. More emphasis is usually placed, by government on policies to increase food production with little or no consideration on how to distribute the food produced efficiently and in a manner that will enhance increased productivity. In other words, food marketing by farmers and their families, mostly in the immediate post-harvest period usually involves a lot of costs and in Nigeria these costs are so high that lowering the costs through efficient marketing system may be as important as increasing agricultural production (Amodio *et al.*, 2007).

3. Shortage of Bio-mass

Many experts and well informed farmers are not sure whether all the nutrients with the required quantities can be made available by the organic materials. Even if this problem can be surmounted, they are of the view that the available organic matter is not simply enough to meet the requirements. The crop residues useful to prepare vermin-compost are removed after harvest from the farms. And they are used as fodder and fuel. Even if some are left out on the farms termites, etc destroy them. Experiments have shown that the crop residues ploughed back into soil will increase productivity and a better alternative is conversion into compost (Charreau, 1994).

The small and marginal cultivators have difficulties in getting the organic manures compared to the chemical fertilizers, which can be bought easily, of course if they have the financial ability as suggested by Hester (2007). However, they have to either produce the organic manures by utilizing the bio-mass they have or they have to be collected from the locality with a minimum effort and cost. Increasing pressure of population and the disappearance of the common lands including the wastes and government lands make the task difficult (WVVOOF NEWS, 2012).

4. Inadequate Supporting Infrastructure

In spite of the adoption of the NPOP during 2000 (Parrot and Marsden 2002), the state governments are yet to formulate policies and a credible mechanism to implement them. There are only four agencies for accreditation and their expertise is limited to fruits and vegetables, tea, coffee and spices. The certifying agencies are inadequate, the recognized green markets are non-existent, the trade channels are yet to be formed and the infrastructure

facilities for verification leading to certification of the farms are inadequate (Morison 2005).

5. High Input Costs

The small and marginal farmers in Nigeria have been practicing a sort of organic farming in the form of the traditional farming system. They use local or own farm renewable resources and carry on the agricultural practices in an ecologically friendly environment (Abdullahi and Kutama, 2012). However, now the costs of the organic inputs are higher than those of industrially produced chemical fertilizers and pesticides including other inputs used in the conventional farming system (Morison 2005).

The groundnut cake, neem seed and cake, vermin-compost, silt, cow dung, other manures, etc. applied as organic manure are increasingly becoming costly making them unaffordable to the small cultivators (Wikipedia, 2012)

6. Non-availability of farm Inputs

Bio-fertilizers and bio-pesticides are yet to become popular in the country (Amodio *et al.*, 2007). There is a lack of marketing and distribution network for them because the retailers are not interested to deal in these products, as the demand is low as was reported by Safiyya (2010) that bio-fertilizers are not marketed by retailers in most parts of Nigeria. The erratic supplies and the low level of awareness of the cultivators also add to the problem. Higher margins of profit for chemical fertilizers and pesticides for retailing, heavy advertisement campaigns by the manufacturers and dealers are other major problems affecting the markets for organic inputs in Nigeria (Seyi, 2012)

7. Lack of appropriate Agriculture Policy

Promotion of organic agriculture both for export and domestic consumption, the requirements of food security for millions of the poor, national self-sufficiency in food production, product and input supplies, etc. are vital issues which will have to be dealt with in an appropriate agriculture policy of Nigeria. These are serious issues the solution for which hard and consistent efforts along with a national consensus will be essential to go forward. Formulation of an appropriate agriculture policy taking care of these complexities is essential to promote organic agriculture in a big way (IFOAM.ORG, 2012).

8. Lack of Financial Support

The developing countries like Nigeria have to design a plethora of national and regional standards in tune with those of the developed countries. The adoption and maintenance of such a regulatory framework and its implementation will be costly (<http://www.wikipedia.com>).

The cost of certification, a major component of which is the periodical inspections carried out by the certifying agencies, which have freedom to fix the timing, type and number of such inspections appears to be burdensome for the small and marginal farmers. Despite contributing 45 per cent to Nigeria's Gross Domestic Product, agriculture, (CBN, 2010) which, before the discovery of oil, was the country's highest revenue earner, is still plagued by funding problem. Supports for the marketing of the organic products are also not forthcoming neither from the State nor from the Federal governments. Similarly, several initiatives meant to boost activities in the sector have not yielded the desired results. The N200bn Commercial Credit Agriculture Scheme was last year a subject of controversy between the National Assembly members, participating banks and the beneficiaries (CBN, 2011). The scheme was established by the Central Bank of Nigeria in collaboration with the Federal Ministry of Agriculture. It is being funded through the issuance of FGN Bond worth N200bn, by the Debt Management Office in two tranches (CBN, 2011)

9. Low production

Conventional agriculture has been shown to produce more yield than organic agriculture. A 2006 study suggested that converted organic farms have lower pre-harvest yields than their conventional counterparts in developed countries (92%) and that organic farms have higher pre-harvest yields than their low-intensity counterparts in developing countries (132%) probably due to lack of fertilizer in the developing countries (Stanhil, 1990). In many cases the farmers experience some loss in yields on discarding synthetic inputs on conversion of their farming method from conventional to organic. Restoration of full biological activity in terms of growth of beneficial insect populations, nitrogen fixation from legumes, pest suppression and fertility problems will take some time and the reduction in the yield rates is the result in the interregnum. It may also be possible that it will take years to make organic production possible on the farm (Samuel, 2007).

Small and marginal farmers cannot take the risk of low yield for the initial 2-3 years on the conversion to organic farming. There are no schemes to compensate them during the gestation period. The price premiums on the organic products will not be much of help, as they will disappear once significant quantities of organic farm

products are made available (Parrot and Marsden, 2002)

10. Inability to Meet the Export Demand

The demand for organic products is high in the advanced countries of the west like United State of America (USA), European Union (EU) and Japan. It is reported that the US consumers are ready to pay a premium price of 60 to 100 per cent for the organic products (Paul, 2011). The upper classes in Nigeria are also following this trend. The market survey done by the International Trade Centre (ITC) during 2000 indicates that the demand for organic products is growing rapidly in many of the world markets while the supply is unable to match it (Wikipedia, 2012).

11. Lack of Quality Standards for Bio-manures

The need for fixing standards and quality parameters for bio-fertilizers and bio-manures has arisen with the increasing popularity of organic farming in the country. There are a very large number of brands of organic manures, claiming the high levels of natural nutrients and essential elements. But most farmers are not aware of the pitfalls of using the commercially available bio-manure products. While the concept of organic farming itself lays great stress on the manures produced on the farm and the farmers' household, many of the branded products available in the market may not be really organic. Elements of chemicals slipping into the manures through faulty production methods could make the product not certifiable as organic. The process of composting which is a major activity to be carefully done is achieved usually by one of the two methods, vermi-composting or microbe composting. While the former is ideal for segregated waste material without foreign matter, microbe composting is suitable for large scale management of solid wastes, especially in cities and metres (Lauralt, 2003). Even though the farmers are using manure produced by different methods, proper parameters for bio-manure are yet to be finalized. Most farmers are still unaware of the difference between bio-manure and bio-fertilizer. While bio-manure contains organic matter, which improves the soil quality, bio-fertilizers are nutritional additives separated from the organic material, which could be added to the soil, much like taking vitamin pills. Bio-fertilizers do nothing to enhance soil quality while the loss of soil quality has been the major problem faced by farmers these days (Kemper, 2010).

12. Political and Social Factors

Agriculture in Nigeria is subject to political interventions with the objectives of dispensing favours for electoral benefits. Subsidies and other supports from both the Federal and state governments, government controlled prices of inputs like chemical fertilizers, the public sector units' dominant role in the production of fertilizers, government support/floor prices for many agricultural products. Similarly, supply of inputs like power and water either free of cost or at a subsidized rate, etc. are the tools often used to achieve political objectives. Any movement for the promotion of organic farming in Nigeria will have to counter opposition from the sections who benefit from such policies in the conventional farming system. The political system in a democracy like Nigeria is likely to evade the formulation of policies, which affect the interests of the voting blocks unless there are more powerful counter forces demanding changes. In the absence of alternative employment opportunities and other considerations (Tribune newspaper, 2012)

Future Prospects of Organic Farming

Organic farming not only results in an economic benefit to the small-scale farmer but it also reduces pollution due to reduced nutrient run-off, and N leaching (Nyamangara and Berstron 2008). Increasing soil organic matter by organic farming has the added benefit of improving soil quality and thereby enhancing the long-term sustainability of agriculture (Laird *et al.*; 2001). Organic agriculture also help to conserve and improve precious resource-the topsoil, compaction, nutrient loss and erosion, organic farmers use trees, shrubs, leguminous plants to stabilize and feed soil, dung and compost to provide nutrients, and terracing which prevent erosion and conserve ground water (Parrot and Marsden, 2002). Some notable importance of organic farming and their impact in the society is presented below.

Employment opportunity

In a survey of 1144 organic farms in the United Kingdom and Republic of Ireland, researchers found that organic farms employed more workers than conventional ones (EJF, 2007). This difference persisted when factors such as the size of each farm (organic farms are typically larger) are taken into account. The researchers concluded that there would be 19% more farming jobs in the UK, and 6% more in Ireland, if 20% of all farms became organic (Piha and Giller, 2003). When properly adopted in Nigeria therefore, organic farming would increase more farming jobs by more than 20 % considering the population size of the farmers in the country.

Environmental and Human Health

Unlike conventional farms, most organic farms largely avoid pesticides (Hester, 2007). Some pesticides damage the environment with direct exposure, human health. Children may be more at risk than adults from direct exposure, as the toxicity of pesticides is frequently different in children and adults.

The five main pesticides used in organic farming are BT (a bacterial toxin), Pyrethrum, Rotenone, Copper and Sulphur. Fewer than 10% of organic vegetable farmers acknowledge using these pesticides regularly; 5.3% of vegetable growers will admit rotenone use; while 1.7% admits pyrethrum use (Lauralt, 2003). Reduction and elimination of chemical pesticide use is technically challenging. Organic pesticides often complement other pest control strategies. Ecological concerns primarily focus around pesticide use, as 16% of the world's pesticides are used in the production of cotton (EJF, 2007)

Run-off is one of the most damaging effects of pesticide use. The USA Natural Resources Conservation Service tracks the environmental effects of water contamination and concluded, "the Nation's pesticide policies during the last twenty six years have succeeded in reducing overall environmental risk, in spite of slight increases in area planted and weight of pesticides applied. Nevertheless, there are still areas of the country where there is no evidence of progress, and areas where risk levels for protection of drinking water, fish, algae and crustaceans remain high" (Kemper, 2010).

Farmers' markets and food quality

The markets for organically produced crops are strongest in the North America and Europe. Price premiums are important for the profitability of small organic farmers. Farmers selling directly to consumers at farmers' markets have continued to achieve these higher returns. In the United States the number of farmers' markets tripled from 1,755 in 1994 to 5,274 in 2009 (Wikipedia, 2012).

In the same vein, organic food is widely believed by the lay public to be healthier than conventional food (Magkos, 2003). Animals fed organic diets appear to be slightly better health and reproductive performance, but similar tests in humans have not been performed.

Consumer Acceptance:

Consumers are now turning to organic food because they believe it to be tastier, as well as healthier, both for themselves and environment. Alfoldi *et al.* (1998) summarized the published literature on differences

between organic and other management systems and found out that, of the seven studies comparing taste of crop produced with organic management versus conventional management, they judged that there was positive impact of organic management in two apples in Australia (Weibelet *et al.*; 1995), and potatoes in Finland (Varies *et al.*; 1996). Nevertheless, the other five studies show no differences. Despite the higher cost for Organic products, consumers are willing to pay for their preference. Economically, organic fruit growing is comparatively healthy, but depends on a higher farm gate price for product (Weibeetl *et al.*; 2004). Another reason for Organic products prominence is the opposition to genetically modified food.

Eco- Friendly.

1. Pest- control

Organic farming is environmentally friendly. This is because it is well known that chemicals have destroyed many beneficial insect species and have caused environmental degradation. For instance, Korean researchers had reported that avoiding pesticides in paddy fields encourages the muddy loach fish, which effectively control mosquitoes that spread malaria and Japanese encephalitis (Bourn and Prescott 2002). The ever-increasing threat to ground water pollution from inefficient and indiscriminate use of fertilizers and pesticides respectively, demand much concern. These threats are eliminated in organic farming systems since natural pest control is practiced. It is confirmed in California that Organic tomato production without synthetic insecticides does not lead to increased crop losses as a result of pest damage (Letourneau and Goldstein, 2001). In-fact, Organic farmers' primary strategy in controlling pests and diseases is with the use of prevention method (Bourn and Prescott 2002).

2. Higher biodiversity

Organic farming also provides energy for microbial activity and this has been suggested as an indicator of change for soil properties (Agren and Bosata, 1998) because the size and activity of the microbial quotient is directly related to the amount and quality of carbon available (Bourn and Prescott 2002).

Therefore, increase in microbial quotient. Organic farms, often explores biodiversity than conventional farms because it is usually with more trees, a wider diversity of crops and many different natural predators, which control pests and help prevent disease (Parrott and Marsden, 2002).

3. Soil conservation.

According to USDA's agricultural research service, manure application in organic farming are better at build-up the soil than no-till despite tillage (Bourn and Prescott 2002). Increasing soil organic matter by organic farming has the added benefit of improving soil quality and thereby enhancing the long-term sustainability of agriculture (Paul, 2011). Organic agriculture also helps to conserve and improve precious resource-the topsoil, compaction, nutrient loss and erosion. Organic farmers use trees, shrubs, leguminous plants to stabilize and feed soil, dung and compost to provide nutrients, and terracing which prevent erosion and conserve ground water (Parrot and Marsden, 2002).

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