

Food Security and Sustainable Agricultural Development in Nigeria Through Healthy and Environmental Best Practices of Farmers

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This paper discussed sustainable food security in Nigeria through farmers' involvement in healthy and environmental best practices. Farmers' health directly correlates with productivity which results in food sufficiency and security. Engaging in healthy and environmental best practices improves health and supports farmers to stay healthy, enhances their attendance as well as productivity at work. This paper noted that one of the factors that cause unproductivity at work is ill-health; ill-health can result in presenteeism (workers who are physically present at work but not performing at their best); and absenteeism (workers not being present at work at all). The paper further argued that farmers' ill-health if not properly managed can result to food insecurity. To avert the incidence of food insecurity, farmers need to produce sufficient food and affordable for use by the people. The paper reasoned that sustainability can be enhanced by healthy and environmental practices of farmers in the course of food production. These practices are activities and lifestyles that can reduce ill-health and improve health of farmers; and activities that can reduce negative effects of agriculture on the environment. Due to farmers' poor personal health profiles, and ignorance to seek proper medical attention when the need arises, the paper concluded that there is need to bring health literacy and environmental hygiene to the door steps of farmers; and advocated for health education through physical, environmental, reproductive as well as sexual health. The paper also suggested alternating bio-fertilizers and pesticides with chemical-fertilizer and pesticides to avoid over-use of chemicals on the farm. And also crop rotation, organic farming, conservative agriculture to alternate the highly chemicalized system of agriculture in practice at the moment.

Keywords: Food Security, Sustainable Agricultural Development, Farmers, Healthy and Environmental Best Practices

Introduction

Environmental management practices (EMP) in agriculture are set of skills and strategies adopted by farmers with the aim of monitoring and managing the effects of their operations on the natural environment. It entails good agricultural systems and practices, which results in sustainable agriculture. The health and well-being of the people would be drastically compromised if

environmental best practices are not emphasized. Health and productivity are synonymous, hence the saying, “health is wealth”. A healthy workforce is most desirable by every employer or management, because one of the most important indicators to economic development is human capital. As long as the workforce is healthy, productivity and growth are achievable. Hence, more attention should be given to health related services that protect the employability of the working age population in the farm so as to maximize productivity. Improving health and supporting farmers to stay healthy preserves them and enhances their attendance as well as productivity at work. The cost of supporting farmers to stay healthy cannot be compared with the cost of absenteeism or reduced work time in the farms. Finkelstein & Brown (2006) identified that obese workers experience higher levels of absenteeism due to illness than normal weight workers; they concluded that healthier workforce are less likely to call in for sick leave due to illness. All the stakeholders in agricultural sector have a role to play in keeping the workforce healthy and productive because farmers' state of health is important for production of food and raw materials. Unproductivity can be caused by several factors, among which is ill-health; ill-health if not managed can result to food insecurity.

Food insecurity occurs when there are problems at any level in the food production-consumption pathway. It is the condition of not having access to sufficient food both in quantity and quality to meet one's basic needs. Peng and Berry (2019) opined that food insecurity occurs whenever the availability of nutritionally adequate or safe food is limited or uncertain. To avert the situation of food insecurity, farmers need to produce sufficient food and affordable for use by the people. When there is sufficient food in the market, the prices will be moderate and people can have access to it resulting in food security. There is food security when there is reliable access to sufficient quantity of affordable, nutritious food. Food Security means that all people at all times must have access to sufficient and nutritious food for active and healthy life. This among other things can be achieved when the productivity is high and the cost of production minimal. According to FAO (2006), the term food security first originated in the mid-1970s when the World Food Conference of 1974 defined it in terms of food supply – assuring the availability and price stability of basic foodstuffs both at the national and international markets.

Healthy workforce is a source of growth through improvement of human capital; Dormant, Martins, Pelgrin, & Suhrckle (2009) explained that this contributes to the GDP per capita mainly through higher participation of the workforce and higher labour productivity level. There are certain indices for healthy living such as good and balanced diet (nutrition), physical exercises and sports; these healthy lifestyles will help prevent chronic diseases and illnesses. Unfortunately, many farmers do not understand the implications and importance of healthy living. They eat the worst of their produce, prefer to patronize quacks when they fall ill instead of going to professional medical practitioners, and do not plan their families with the current reality of the time. These factors and many others can weigh

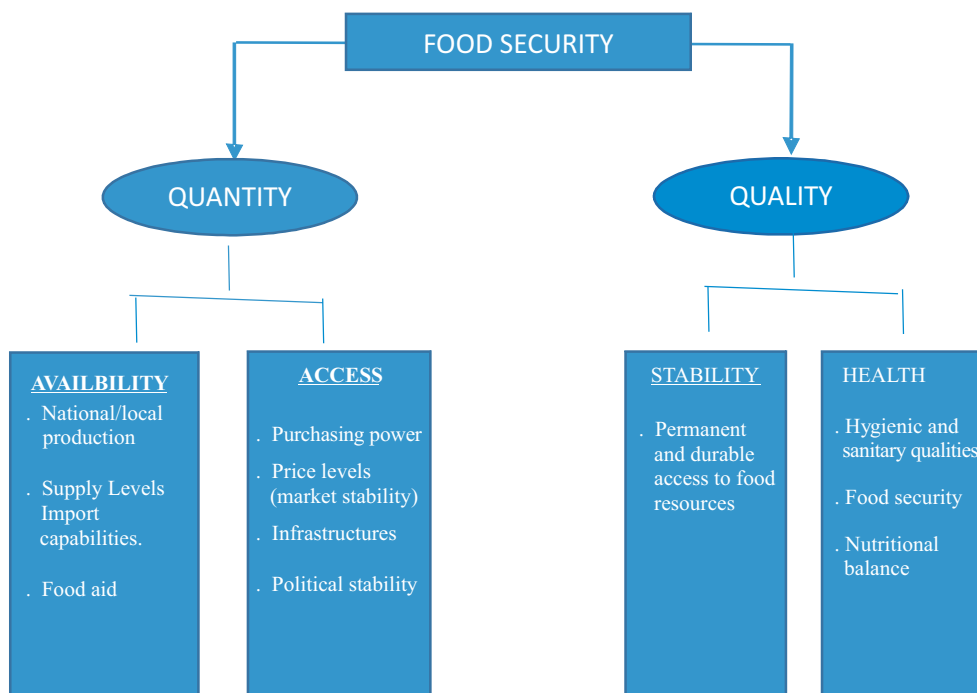
down productivity; it becomes imperative to advocate health education and literacy for farmers for increased productivity.

Developing the right attitudes and behaviours that promote healthy lifestyle and safe environment for lifelong fitness and productivity is the aim of this paper. The highlights to be discussed include; food security, sustainable agricultural development, farmers, healthy and environmental best practices.

Food Security

A nation is food secured when there is adequate and food availability at all times to sustain a steady expansion of food consumption and to offset fluctuations in production and prices. As an immediate measure in strengthening food security, the good health of the farmers is important because it would guarantee increasing productivity. Also, safe and sustainable agricultural practices are important to sustain food production and safe guide future food production. A sustainable agricultural system gives better farming and enables the environment for future production. Good farming system and healthy living of the farmers are necessary to increase food productivity and protect biodiversity.

Swaminathan (2001) noted that the concept of food security has been undergoing evolutionary change; availability and accessibility alone does not lead to food security, biological absorption of food in the body is related to the consumption of clean drinking water as well as environmental hygiene. The components of food security are; food availability, food accessibility, food stability, utilization of food and malnutrition. Bogdan (2015) classified food security into; quality and quantity and these have serious effects on the dimensions of food security.



Food and Agriculture Organization (2019) opined that food security and sustainable agriculture are interconnected concepts that focus on ensuring the availability of sufficient, safe and nutritious food for all people while minimizing the negative impacts of agricultural activities. Achieving food security and sustainable agriculture requires the adoption of healthy and environmental best practices by farmers.

Sustainable Agricultural Development

Sustainable development aims to meet human development goals and at the same time enables natural systems to provide necessary natural resources. It is development that meets the needs of the present without compromising the ability of the future generations to meet their own needs. Tomislav (2018) opined that the concept of sustainable development is based on the concept needs and the concept of future generation. Also, Bogdon (2015) analyzed sustainable development as a new type of human strategy that meets current needs without compromising the ability of the future. The aim of sustainable development is to optimize the realization of a society's many and different social, environmental and economic objectives at one and the same time. Pretty, Toulmin and Willams (2011) considered sustainability as a precondition for long-term food security. The environment and natural resources are precondition for the availability of food and food features prominently in Sustainable Development Goals. This is because they are interconnected with almost all aspects of economy, environment and society. Food security is a component of sustainable development - a nation has food security and sustainable development only when there is enough available food while insuring the future generations meet their own needs. Since sustainable development signifies a better present and future quality life, healthy practices of farmers and safe environment become imperative. Bogdon (2015) highlighted some sustainable development strategies as provided by European Union, most of them related to environment;

- Climatic change and clean energy;
- Sustainable transport;
- Sustainable consumption;
- Natural resources management and conservation;
- Public health.

Sustainable Agricultural Development is the management and conservation of the natural resource base and the orientation of technological change in such a manner as to ensure the attainment of continued satisfaction of human needs for present and future generation. Sustainable agriculture and organic farming are synonymous; According to Umesha, Manukuma and Chandrasekhar (2018), the goal of sustainable agricultural development is to end hunger, achieve food security, and improve nutrition. Some inter linkages that support sustainable agriculture include; ending rural poverty,

tackling climate change, promoting gender equality and ensuring healthy lifestyles. Sustainable agriculture is the practice of producing food in a way that is friendly to the environment and at the same time economically viable. It aims to conserve and enhance soil and water resources, minimize the use of synthetic products such as pesticides, herbicides, fertilizers. Hence, sustainable agricultural practices are seen as environmental best practices farmers can use to improve soil fertility, reduce resources depletion, mitigate climate change, and promote human/environmental health while ensuring food security for the present as well as the future generation.

Farmers

Farmers are of great importance in the society, because they are the producers and givers of food to the people, they contribute to food security and rural development. Also, they provide employment for the populace and raw materials for further production. A farmer is one who is engaged in agriculture for food and raw materials. They are individuals or group of people who are involved in agricultural activities for cultivation of crops, rearing of animals and other activities related to food production. There are different types of farmers- arable, pastoral, and mixed farmers. They can also be called, agriculturists or agronomists. Farmers face several challenges in their line of work; these include unpredictable weather conditions, market fluctuations, pests and diseases, high costs of inputs etc. there is therefore need to constantly innovate and adapt to new ways of farming to ensure to sustainability and profitability of their business. Furthermore, farmers and their families face many physical risks and health challenges, therefore, safety and staying healthy are important for continual production of food and raw materials. Avoiding accidents in farm, staying physically, mentally and emotionally fit, as well as accessing medical services and treatment are possible ways of healthy living farmers can adapt. Brownyn, Kerry, Brian, Joanne et al (2016) observed that farmers who lived remotely reported worse mental health. They further stated that farmers work long hours, have physically demanding work, and are less likely to take vacations and retire like people in other occupations; hence need to encourage them to stay healthy.

Healthy and Environmental Best Practices

Healthy and environmental best practices include areas such as; physical health, environmental health, emotional health, reproductive health as well as sexual health. These areas are embedded in health education. Colman, Andreea, Jarkko & Broucke (2020) noted that health education aims at increasing farmers' health and safety by encouraging them to adopt health-enhancing lifestyles. They further explained that health education enhances knowledge as well as skills, attitudes and practices that prevent illnesses yet maintain healthy living. Innocent-Ene, Ajibola and Aye (2023) explained that rural farmers have been identified as a group with a poor personal health profiles; they do not have regular health check to monitor their general health and physical wellbeing. And do not visit the hospital on

time for adequate medical attention. Some of the factors that determine high health profile and access to medical care include; level of education, socialization, awareness, enhanced income etc. These are not synonymous with Nigerian farmers especially in the rural areas. Farmers' health challenges range from respiratory diseases, noise-induced hearing loss, rheumatism, arthritis, body pain, skin disorder, cancers, heat-related illnesses, chemical toxicity, pesticide-related illnesses etc. These occur because of the nature of their activities on the farm and out of the farm.

Healthy Living Styles

Health is a state of complete physical, mental, social and emotional well-being. WHO (1999) explained that health is not just about avoiding illness or disease but also about physical, mental and social well-being that cuts across the entire family. Healthy living is a way of living that lowers the risk of being seriously ill or dying early. This is to say that so many illnesses can be avoided or prevented by lifestyles and nutrition. There are four pillars of good health, they help to maintain healthy lifestyle and introduce habits that can improve one's health; these habits can be difficult to change even at old age. They include;

- **Good nutrition:** It is important to eat healthy and at the appropriate time too. Good nutrition involves reduction in the intake of meat and animal protein, eating more of fruits and vegetables. Since majority of the farmers do not have problem of physical fitness, good nutrition and balanced diet is paramount because being healthy is also about what one eats-choosing the right food.
- **Exercise:** this plays an important part in the health and well-being of an individual; it can also be called physical activity. There are three components of being physically fit-stamina, strength and suppleness. WHO (1999) identified the risks of physical inactivity as coronary heart disease, strokes, high blood pressure, overweight, joints stiffness, osteoporosis etc. For farmers who are already physically active in some parts of their body, there is still need to find opportunities to use other parts of their body to maintain balance and use more varieties of movement.
- **Relaxation and sleep:** Relaxation is very important as it is the state of being free from tension and anxiety; it helps in the stability of mental health. Also sleep is a state in which the body and mind are not active. These two are needed to keep the heart healthier, reduce stress and tension, improve brain function and help avoid depression, anxiety, and obesity.
- **Seeking Medical Care when necessary:** Avoid the temptation of self-medication and drug abuse.
- **Healthy Sexual Behaviours:** Abstinence or being faithful to one's sexual partner.
- **Regular Checkup:** Having a regular health check to monitor one's general health and physical

well-being is important, it means giving one's health adequate attention. Unfortunately many farmers do not have such consciousness and hardly visit professional medical practitioners unless when the situation becomes hopeless or at emergency. Regular checkup can identify and start appropriate treatments for health issues early; this is better and saves cost as well as provides remedies.

Chart for Healthy Life Style Practices

S/N	Strands	Sub-Strands
1.	Personal Health Practices	<ul style="list-style-type: none"> • Illness and disease prevention • Regular checkup
2.	Active Living	<ul style="list-style-type: none"> • Exercises to maintain stamina, strength and balance.
3.	Nutrition	<ul style="list-style-type: none"> • Healthy eating • Food and fluid for healthy living
4.	Human Sexuality	<ul style="list-style-type: none"> • Healthy sexual lifestyle • Biological growth and development • Good sexual relationship with one's partner.

Source: Author's computation (2023)

Healthy Lifestyles and Healthy Workforce

Workers' health directly correlates with productivity; therefore, every economy needs a healthy, able and available workforce to compete in the labour market. Health can be in two ways; curative and preventive, meanwhile Loeppke, Christain, Goechfeld, Himmelstein, Kessler et.al (2009) explained that continuing to invest in high technology sick care is a low leverage investment compared with equivalent investments in preventive and early intervention services when measured in years of productive or high quality life saved.

There are workers who are physically at work but not performing at their best due to underlying health issues or stressors; the term is called Presenteeism. Also, there are workers who are never at work because of ill health, it is called Absenteeism. Presenteeism is more disastrous and significantly costly

than absenteeism because it is rather difficult to recognize and manage. This calls for the maximum and total utilization of both the preventive and curative measures in health care for attainment of healthy life.

Environmental Best Practices in Agriculture

Over the years, food production has been through industrial agriculture, a system dominated by enormous use of chemicals that damage the soil, air, water and climate. The system squanders and degrades the resources as well as endangers the environment. This calls for inward review of agricultural practices to know which favours the environment for safety and healthy living. Environmental best practices are those actions that seek to reduce the negative environmental impact caused by activities and processes through changes and improvements in the organization and development of actions. In agriculture, a number of environmental issues cause environmental degradation; they include genetic engineering, irrigation problem, biodiversity loss, deforestation, climate change, use of chemicals for cropping and fishing, pollutants, soil degradation and waste. Therefore, healthy environmental practices include stable climate, adequate and clean water, sanitation and hygiene, safe use of chemicals, protection from radiation, healthy and safe workplace, sound agricultural practices etc. Welsh and Rivers (2011) opined that there are farming systems and practices designed to reduce negative effect of agriculture on the environment. Following these practices would help farmers reduce the negative impact of their activities on the environment. Here are some key practices that can contribute to food security and sustainable agriculture;

- i. Crop rotation: here, farmers rotate different crops on their fields over time to improve the soil, reduce pests and diseases and enhance nutrient cycling. With this practice, soil fertility is maintained, and there is no need for synthetic fertilizers and pesticides.
- ii. Sustainable livestock production: this occurs by reducing the use of antibiotics, hormones, and other enhancers.
- iii. Organic farming: promotes natural practices and eliminates the use of chemicals; this helps to protect the environment, preserve biodiversity and ensure the production of safe and healthy food.
- iv. Conservation agriculture: these are minimum tillage, crop rotation, cover cropping; these help to improve soil health, conserve water, and reduce soil erosion.
- v. Integrated Pest Management (IPM): encouraging farmers to adopt IPM practices reduces reliance on chemical pesticides. It involves monitoring pests' populations using biological control agents and implementing cultural practices; once in a while, the farmer resort to chemical control. This approach minimizes the negative impacts of chemicals on soil, animal, plant and human health.
- vi. Capacity Building: this is providing farmers with training and access to information on

sustainable agricultural practices. This empowers them to adopt best practices and make informed decisions that contribute to food security and sustainable development.

Pretty (2008) noted that sustainable agricultural systems would produce food that are both nutritious and without synthetic inputs that are harmful to the human body as well as the environment. This is moving towards a farming system that is more sustainable-environmentally, economically, and socially. Avoiding over-use of compounded fertilizers, pesticides, livestock feed additives, growth regulators and relying on mixed farming/crop rotation, farmyard manure, green manure to maintain soil fertility is most environmental friendly and safer. The chemical fertilizers and pesticides have been seen to affect the quality of agricultural produce, but bio-fertilizers and pesticides are eco friendlier and safe for the environment. Due to the increasing emphasis on minimizing the use of chemicals in farming and reducing environmental pollution, bio-fertilizer is gaining more ground. Bio-fertilizers are organisms added to the rhizosphere of the plant to enhance their activities in the soil whereas bio-pesticides are the use of insects' natural enemies as biological control agents. They also include pesticidal substances derived from plants containing added genetic materials.

Important facts about these environmental best practices (sustainable agriculture) can be seen on;

- Soil health: the practice of crop rotation, cover cropping, use of compost manure result to healthy soil that are rich in organic matters and nutrients.
- Organic food production: it promotes and encourages the use of organic farming practice such as avoiding synthetic pesticides and fertilizers.
- Water conservation: environment best practice through sustainable agriculture promotes efficient water use preventing water pollution from agricultural activities.
- Preservation of Biodiversity: it aims at protecting and enhancing biodiversity; this helps provide and maintain natural habitats.
- Renewable energy use: it encourages the use of renewable energy such as solar panels; this reduces reliance on fossil fuels and decreasing greenhouse gas emissions.

Summary

Promoting healthy and environmental best practices among farmers is essential for achieving food security and sustainable agriculture. This requires a holistic approach that integrates ecological, economic, and social considerations to ensure long-term wellbeing of the farmers, environment and safe food products. Environmental best practices are synonymous with environmental sustainability; and this is brought about by sustainable agricultural practices-building healthy soil and preventing erosion, minimizing air and water pollution, as well as promoting biodiversity. These promote healthy food and environment for all. Environmental best practices and healthy lifestyles improve health and supports farmers to stay healthy, enhances their attendance as well as productivity at work. Healthy

environmental practices include stable climate, adequate and clean water, sanitation and hygiene, safe use of chemicals, protection from radiation, healthy and safe workplace, and sound agricultural practices; while healthy living involves; good nutrition, regular exercise, relaxation/sleep, regular checkup, seeking medical care when necessary and healthy sexual behaviours. If and when farmers abide by these practice s highlighted above, the farmer is sure of good health, secured and safe environment for present and future production of food which in turn brings about sustainable food security.

Conclusion

Absenteeism and presenteeism occasioned by ill-health affect the productivity of the farmers while higher doses of chemicals (pesticides and fertilizers) have direct influence on crop yield negatively and positively. As Nigeria's population continues to grow exponentially, efforts are geared towards sustainable increase in food production. Health of the farmers and environmental practices are among the factors affecting food security; therefore, farmers are encouraged to be health conscious as well as adapt ecofriendly and environmental safety measures in food production.

Suggestions

- i. Avoid over-use of chemicals in farming, by alternating chemical fertilizers and bio-fertilizers, chemical pesticides and bio-pesticides.
- ii. Health education awareness should be created regularly to rural farmers for them to see the need of making use of professional medical practitioners.
- iii. Alternate use of bio fertilizers and chemical fertilizers and all other agro-chemicals.
- iv. Healthy living through good nutrition, good sexual habit and access to Medicare are of utmost importance to farmers' wellbeing and health.
- v. Adoption of crop rotation, organic farming, and conservative agriculture is essential to return the soil and the environment to nature.

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