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Impact of Agricultural Education on the Productivity of Small scale Agriculture in Ekiti State, Nigeria

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ABSTRACT

Agriculture is the key to growth in any country that desires social and economic development. Small-scale agriculture makes a significant contribution to the sustainability of employment, food security, and poverty reduction. In-depth knowledge and skills in both minor and major agricultural operations cannot be left out in agricultural productivity. That is why agricultural education is very crucial for the productivity of small-scale agriculture. Therefore, this paper examines the impact of agricultural education on the productivity of small-scale agriculture. It highlights the roles of agricultural education, reviews the empirical studies on small-scale production. Moreover, it examines why small-scale agriculture should be at the forefront. It was therefore recommended that the government should encourage agricultural education and training among small-scale farmers. Also, for small-scale agriculture to thrive in Nigeria, most especially in Ekiti State, government should invest in small-scale agriculture in terms of financial assistance. Farm inputs should be supplied at a subsidised rate to small-scale farmers. In conclusion, the government should establish a monitoring team to ensure that the fund is used for what it is purported to be used for and also to ensure continuity in food production.

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1.0 Introduction

The population is steadily growing in Nigeria, so is the demand for food, which is why agricultural education is vital. Through agricultural education, generations can have a thorough knowledge of where their food comes from, and more people may be inclined to become employed in agriculture to help meet the needs of a growing population. Agricultural education is a systematic programme of instruction for public school leavers, out-of-school and post-secondary youth, and established farmers, organised to improve agricultural methods and rural living (15;8). He also described agricultural education as a programme designed for preparing or equipping teachers with knowledge, skills and attitude in teaching any technical areas of agriculture to enable them to impart the same to the students in schools and colleges. This implies that agricultural education is an education that prepares and develops students' abilities to make a beginning and advance in farming and to produce farm products efficiently. Then, it means a way of receiving instructions that can lead to an increase in agricultural productivity because it focuses on the skills that learners must use on specific agricultural operations, provides technical knowledge and develops interest and attitudes needed for the successful execution of such an operation. These instructions can be adequately received through agricultural education. Agricultural education is a systematic programme of instruction available to students desiring to learn about the science, business, technology of plant and animal production and/or about the environmental and natural resources systems.

Agricultural Education is a type of education that equips the youth and potential farmers with skills, attitudes, work habits and appreciation essential for the development of practical agricultural experience [7]. [1] defines it as a process of training learners in the process of agricultural productivity as well as the techniques for teaching agriculture. The systematic teaching and training related to agriculture, land management and natural resources encompassing both theoretical knowledge and practical skills and often geared towards careers in farming and related fields and it covers a broad range of topics, including: farming and food production, plant and animal sciences, land and resource management, agribusiness and sustainable practices. [14] asserted that agricultural education is the acquisition of knowledge and skills in agriculture with the view to impartingthis knowledge and skills to prospective farmers for better productivity. This means agricultural education is a vital developmental process which is directly related to the effectiveness of the economy in providing the requirements of trained manpower. It will educate the prospective farmers on tremendous opportunities in agro-business and expose them to a vast store of knowledge and skills for those contemplating big-time farming. It could further be seen as an occupational education designed to develop particular knowledge, skills, including entrepreneurial skills associated with various farming designs.

According to [8],entrepreneurial skills are the abilities possessed by an individual to initiate, run

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and manage one's enterprise successfully. Agricultural education is beneficial for aspiring farmers in providing the knowledge and skills needed to start and manage a farm enterprise or agricultural business, raising awareness about food systems, nutrition, and the importance of agriculture, equipping people with the skills and knowledge needed for careers in agribusiness, food science, and environmental management. [4]also explained that agricultural education plays a crucial role in providing a distinct and necessary purpose in the mental development of students, helping students to secure the skills necessary to earn a living and teaching students the dignity of work. This implies that educated farmers can improve food production, distribution and contribute to a stable food supply. Educating small-scale farmers about sustainable agriculture helps protect the environment and ensure long-term food production without negative impact on natural resources.

Agriculture is a major economic sector in which agricultural education can help to drive economic growth in rural areas and address issues like food insecurity, climate change, and poverty. [16]said that if agricultural education is encouraged, there will be sufficient raw materials to feed the industries, which can produce finished goods or partially finished goods that can serve as raw materials for other industries. Agricultural education programmes often include training in communication, teamwork, and problem-solving skills. [13]said that it influences learner interest and attitude toward agriculture, helps to apply knowledge, solve problems through decision making and learn agricultural skills through practical experiences. Education significantly boosts agricultural productivity by enhancing farmers' skills, decision-making abilities, and access to information, leading to better resource management, technology adoption, and ultimately increased yields of small-scale agriculture.

Small-scale agriculture is farming operations that typically involve smaller land areas, often less than two hectares, which is approximately five acres. These farms often prioritize both sustenance and profit, with some focusing on producing food for their consumption while also selling surplus to the local market. According to [4], it is often associated with more sustainable agricultural practices such as reduced chemical inputs, crop rotation and biological control. Small-scale farmers are more likely to use sustainable farming practices like growing a diversity of crops and planting cover crops to improve soil health. They tend to use less energy and emit fewer greenhouse gases than large mechanized farms. Small-scale farming has the potential to revolutionise local food markets by increasing food security, promoting sustainability and boosting local economies. It is a critical component of the global food system, producing a significant portion of food on limited land. Despite their size, small-scale farms contribute substantially to food security, environmental sustainability and local economies. [9; 18] said that smallholder farms produce more than large farms. They said that the inverse relationship phenomenon exists in farm size and their productivity, as smallholder farmers decide which crops will give them the best harvest and income with minimum inputs. Smallholder farms are said to be more technically efficient in

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terms of labour, which comes from households to maximize production and reduce cost, while large farm sizes are labour intensive and, if not properly supervised, lead to low food production [18].

2.0 Impact of Agricultural Education on the Productivity of Small-Scale Agriculture

Education has a positive impact on agricultural output, and several mechanisms through which education influences agricultural output have been explored by researchers. Farmers with good education possess improved decision-making skills and hence better manage resources to exploit farms of various sizes [2]. This means education boosts farmers' ability to obtain, decode and understand information, thus enabling them to make better use of available information to come up with pertinent solutions to production, market and financing challenges. Well-educated farmers are not only capable of utilizing available information but also have better access to needed information, implying that education alleviates information asymmetry in several aspects, especially regarding input quality, which is vital to agricultural output. Consequently, highly educated farmers use a combination of inputs superior to what is applied by low-skilled ones, meaning that the former allocates scarce resources more efficiently [22].

Educated farmers are more active in adopting new technologies, thereby enjoying the first-mover advantage and making the new technology even more profitable and attractive. [3; 12]. They explained further that well-educated farmers are likely to adopt new technologies early since they get direct access to relevant information and are capable of distinguishing between promising and unpromising innovations. By contrast, farmers with limited education often prefer not to take up a new technology until its benefits have been proved or wait till their counterparts have successfully applied it. Educated farmers adopt new technologies earlier since they are more willing to embrace riskier production technologies of higher expected returns [2]. Hence, education is supposed to reduce the perceived level of uncertainty and the aversion of the farmer toward endogenous risks arising from his own choice of production technology. This means that providing education to a farmer may encourage him to take up new technologies earlier and also alter their attitude towards risky production technologies on crop varieties they have not dared to plant previously. The farmer then optimizes his mix of inputs to nurture crops based on the improved ability to evaluate the associated risks and opportunities ,rather than on the education attained. Education increases the value of farmers' entrepreneurial ability, that is, the ability to perceive, interpret and respond to new events in the context of risk. [23] said that, when considering the role of education in agricultural output, it is useful to distinguish between cognitive and non-cognitive effects. They further explained that, regarding the cognitive effect, one can be aware of the formation of general skills like literacy and numeracy. Literacy as an indispensable element of education enables a farmer to follow written instructions as to chemical input usage. Numeracy enables him to calculate precise dosages and facilitates the making of wise production decisions.

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Consequently, the cognitive effect of education raises output given a certain amount of inputs. They further explained that education also has a non-cognitive effect that changes farmers' attitudes and preferences concerning the utilization of inputs, especially hired labourers who are normally prone to moral hazard since wages are often predetermined while their work effort is not fully observable, verifiable and enforceable due to information asymmetry. [6]said that education improves a locative efficiency through the greater propensity to select inputs of higher productivity and decision-making skills of farmers. In support of the opinion of [6], the researcher opines that farmers can apply a combination of conventional inputs that have to be well managed since any misuse of them may have adverse effects on output and thus income. Consequently, there is a high degree of information asymmetry for farmers concerning the use of inputs for production. This implies, agricultural education-induced knowledge and skills enable farmers to determine a better combination of inputs as their quantity gets larger by the farm area for better productivity.

3.0 Agricultural Education and Agricultural Productivity

Agricultural productivity is measured as the ratio of agricultural outputs to inputs, while individual products are usually measured by weight, which is known as crop yield.varying products make measuring overall agricultural output difficult [13]. Therefore, agricultural productivity is usually measured as the market value of the final output. This productivity can be compared to many different types of inputs, such as labour or land. Such comparisons are called partial measures of productivity [21]. Agricultural productivity is the measure of how much output (crops, livestock) is produced for a given amount of inputs (land, labour, fertilizer). Agricultural productivity refers to the efficiency with which inputs (like land, labour, and capital) are transformed into agricultural outputs (like crops and livestock), measured as the ratio of output to input. It's a crucial factor for food security, economic growth, and poverty reduction. Partial measurement productivity focuses on the relationship between a specific output and a single input, such as yield per hectare or output per worker, while Total Factor Productivity (TFP) considers the relationship between all outputs and all inputs to provide a broader measure of efficiency.

3.1 Importance of Agricultural Productivity

i. Food security: Increased agricultural productivity is vital for producing enough food to feed a growing global population.

ii. Economic growth: A productive agricultural sector can contribute significantly to a country's overall economic growth and development.

iii. Poverty reduction: Agricultural productivity growth can lead to increased incomes and improved livelihoods in rural areas, contributing to poverty reduction.

3.3 Factors Influencing Agricultural Productivity

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i. Technology: Improved farming techniques, machinery, and crop varieties can boost productivity.

ii. Inputs: Access to quality seeds, fertilizers, and other inputs is crucial.

iii. Infrastructure: Irrigation systems, storage facilities, and transportation networks play a vital role.

iv. Climate: Weather patterns and climate change can significantly impact agricultural productivity.

v. Policy: Government policies and regulations can influence agricultural productivity through land use, trade, and investment.

Our current food systems are not sustainable, and hunger has been on the rise for several years. Small-scale farmers can offer solutions to these problems, but to succeed, they need the right tools, and that requires re-orientation on productivity through agricultural education and training. [11]explained that agriculture is an important sector of the economy with high potential for employment, food security and poverty reduction. It thinks that productive and prosperous small-scale farmers at their core can help us build a sustainable future.

3.4 Effects of Education on Agricultural Productivity

Education has a relative impact on prospective and established small scale farmers according to [24] with the following effects;

i. **Enhanced skills and knowledge:** Education equips farmers with the knowledge and skills to understand and apply modern agricultural techniques, including efficient use of resources, pest and disease management, and soil fertility improvement.

ii. **Improved decision-making:** Educated farmers are better able to analyze market trends, understand the costs and benefits of different farming practices, and make informed decisions about crop selection, input use, and production strategies.

iii. **Increased access to information:** Education facilitates access to and understanding of agricultural information, including research findings, best practices, and new technologies, allowing farmers to stay informed and adapt to changing conditions.

iv. **Faster adoption of new technologies:** Studies show that better-educated farmers are more likely to adopt new technologies and farming practices, leading to increased productivity and efficiency.

v. **Better resource management:** Education helps farmers understand the importance of sustainable resource management, including water conservation, soil health, and responsible use of inputs, contributing

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to long-term agricultural sustainability.

vi. **Improved market access:** Educated farmers are often better equipped to understand market demands, negotiate prices, and access markets for their produce, leading to higher incomes and improved livelihoods.

vii. **Higher social position:** Scholarly farmers often achieve higher social positions and become role models for other farmers.

3.5 Reasons why Small Scale should be at the Forefront

[18] and [20] posited that increased incomes and profits among small-scale farmers and their businesses are invested back into local economies, where they create jobs and equitable growth. This is crucial for creating opportunities for rural youth to live and thrive in their home communities. In contrast, the benefits from larger-scale industrial farming models tend to lack these local links, with studies showing adverse impacts on local incomes and inequality.

Small-scale farming systems are often more environmentally sustainable. Small-scale farmers often have greater levels of attachment to local landscapes and ecosystems. And sustainable, nature-based practices such as organic agriculture, crop rotation, and integrated pest management, permaculture rely on the wealth of localized environmental knowledge that small-scale farmers possess.

Small-scale farms are especially critical for the food security and nutrition of vulnerable groups. These farms serve predominantly domestic and local markets, including communities that modern supermarkets do not reach.

Small-scale farming is often more productive than other types of agricultural businesses, including industrial farms. Land productivity on small farms has been shown to be higher in many contexts, as a result of the advantages associated with family-based labour and management. Family workers are more motivated, have more specific knowledge of the land, and are prepared to withstand shocks that would send corporate-managed farms out of business.

Small-scale farming also contributes to culture and community. Communities that revolve around small-scale farming represent a rich and diverse cultural heritage, encompassing art, music, history and architecture. This kind of farming is also a rich source of traditional knowledge, offering solutions for balancing food production, livelihoods and the natural world [19].

Conclusion

In conclusion, small-scale farming systems can offer solutions to many challenges if the farmers whoengage in it are exposed to education and training on agriculture, also enriching the quality of rural lives and livelihoods. Rural and urban areas must be better linked so that small-scale farmers can provide healthy, affordable food for growing urban areas. It is essential to provide small-scale

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farmers with agricultural education and training on sustainable farming practices, market access and the use of modern technologies to enhance their productivity. Agricultural education and training can help attract young people to farming and ensure the future of small-scale agriculture. Though small-scale agriculture has the potential to transform local food markets by providing fresh, sustainable and locally produced food, little can be achieved without adequate knowledge and skills in agriculture through agricultural education and training.

Recommendations

It was therefore recommended that;

1. Government should encourage agricultural education and training among small scale farmers.
2. For small scale agriculture to thrive in Nigeria most especially in Ekiti State, government should invest in small scale agriculture in term of financial assistance.
3. Farm inputs should be supply at subsidised rate to small scale farmers.
4. Government should establish monitoring team to ensure that the fund is used for what is purported for and also to ensure continuity in food production.

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