

Horti Nigeria

BUILDING A SUSTAINABLE & INCLUSIVE
HORTICULTURE SECTOR

Unlocking **OPPORTUNITIES** for youth in Oyo and Ogun through innovation and technology BRIEFING PAPER

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How can Nigeria's horticulture sector attract young people and offer them an opportunity to establish and run a profitable business? This brief looks more closely at what we know about young women's and men's resources, abilities, and willingness to make decisions and the benefits derived from horticultural innovations in Oyo and Ogun states.

The first section investigates youth-specific challenges in Nigeria's horticulture sector. The second and third sections aim to describe the enabling environment and what is missing for motivating young people to engage in vegetable production. The fourth and fifth sections dive into Oyo and Ogun's new horticulture hubs, front-running entrepreneurs, and exciting innovations and pilot projects. Conclusions are drawn on possible pathways to unlock opportunities in horticulture with potential to provide the highest employment rate and returns per hectare and how affordable and innovative technologies can motivate new generations of young farmers in Nigeria as entrepreneurs.¹

1. Navigating Challenges Faced by Nigeria's Youth in the Horticulture Sector

The paths currently available for young people to eventually make a living in the horticulture sector, as an entrepreneur or employee, are not without obstacles. Among which, knowledge and education have gained considerable traction. In rural areas, basic knowledge on how to grow vegetables for home consumption is pervasive. Many children, especially young girls, have likely witnessed their mothers engage in horticulture. But in part due to their educational background, school accessibility challenges, or a lack of confidence in the education system, young people may not have the skills needed for this in the 21st century.² To be a young businessperson requires management, financial, and entrepreneurial skills and even science, technology, engineering, and math (STEM) skills, especially in the rapidly modernizing horticulture sector.³

Box 1. The HortiNigeria program and its youth focus

HortiNigeria is a four-year (2021-2025) program funded by the Embassy of the Kingdom of the Netherlands in Nigeria and implemented through a consortium led by the International Fertilizer Development Center (IFDC), together with East-West Seed Knowledge Transfer, Wageningen University and Research, and KIT Royal Tropical Institute. The program aims to facilitate the development of a sustainable and inclusive horticulture sector that contributes to food and nutrition security in Nigeria. It targets women and youth, with youth comprising young males and females between the ages of 18 and 35. This age bracket, different than other brackets used within Nigeria (e.g., 15-29) captures the period that most young people in Nigeria are transitioning to adulthood and require social, economic, and political support to realize their full potential (National Youth Policy, 2019).

Expectedly, young people manage various household responsibilities concurrently, and in their daily lives, education and vegetable production are just two of multiple activities. They are presented with various career options by their teachers, friends, and families or through social media, some more promising than others, and they may make opportunistic decisions on where to focus their limited time.

Upon graduation from secondary education, only a fraction of Nigeria's young workforce can be absorbed into jobs available along the emergent horticulture value chain. The national unemployment rate is around 25-30%; therefore, more than 20 million Nigerians remain unemployed, 14 million of whom are young people (National Bureau of Statistics, 2021). According to the World Bank, workers in vulnerable employment situations (no formal arrangement) do not have a safety net against economic shocks and are more likely to fall into poverty.⁴ In 2019, a staggering 85% of women and 75% of men were engaged in vulnerable employment, which are higher than the average rates in sub-Saharan Africa.

¹ <https://www.wur.nl/en/show/Transforming-Nigerias-vegetable-markets.htm>

² In Nigeria only 43% of children who reach primary school entry age actually enter grade 1: 51% in urban areas and 37% in rural areas. Upper secondary school is ultimately completed by 62% of children in Ogun State and 64% of children in Oyo State (NBS and UNICEF, 2022).

³ Mastercard Foundation. 2021. What makes young women successful in STEM careers?

⁴ <https://genderdata.worldbank.org/countries/nigeria/>

A study that provides a snapshot of the horticulture sector in Oyo and Ogun included close to 500 participants from 13 stakeholder groups, e.g., smallholder farmers, commercial farmers, processors, traders, governments, financial institutions, etc. (HortiNigeria, 2023). The horticulture sector's performance on the topic of "youth participation in vegetable production" was rated as moderately negative in each of the two states. The topic "youth participation in supporting services along the vegetable value chains" was rated as having moderately negative performance in Oyo State and a severely negative performance in Ogun State. In another study of the horticulture sector, the majority of a small sample of young entrepreneurs in Oyo and Ogun states faced age-related challenges.⁵ Result showed correlation between age and outcome as, due to being young, the entrepreneurs questioned their abilities and decision-making power and lacked access to funding (especially for fixed assets), information, and skills.

Assuming some similarities in youths' ambitions across Nigeria, another study offers more insights: a survey of 683 youths (age 18-35) in rural households in the states of Kwara (North-Central) and Ekiti (South-West) found that 46% of respondents engaged in agriculture or agribusinesses only to avoid unemployment. Half of them (51%) engaged out of interest and/or passion, and only 16% of total respondents participated in agricultural training (Osabohien et al., 2021).⁶

Young people are not a homogenous group. They are faced with different challenges and opportunities, experience different levels of empowerment, have different education levels, and live under different societal norms. Geographically, gender and cultural differences also exist among the youths engaging in agriculture in the north, in states such as Kano, Kaduna and Borno, and the south, in states such as Oyo and Ogun.

In establishing and running a profitable horticulture farm business, barriers for youth can be economic, socio-cultural, religious, or legal. In some communities, young women may not have the right to own or, in some cases, cultivate the land. Moreover, women in Nigeria have less access to land and resources and are affected by norms with regard to their decision-making and negotiation powers (Box 2).⁷ On the other hand, young men may simply be more attracted to other jobs. According to some horticulture sector experts who support youth in engaging and thriving in this sector, many young men engage in distractions and activities that offer quick earnings, such as gambling.⁸ For some young men, social norms may create more pressure to earn an income, which is associated with their transition to adulthood and supporting a family. Short-term returns are often prioritized.

Box 2. Attracting youths to agriculture in Oyo and Ogun states requires a gender lens and transformation of some gender norms

"Men are meant to travel far and not women." –Village Head in Ilu Titun, Oyo State

"Tough men like my husband don't give women freedom to make decisions." –Woman in Ilu Titun, Oyo State

Ilu Titun is a village of about 2,500 people in Oyo State without much infrastructural development. It lacks electricity and good roads and has only one primary school. Almost all inhabitants are of Yoruba ethnicity, growing crops for their own consumption and selling some at the village's market. Women can move freely within the village but not beyond it, while men have access to trucks, enabling them to access markets outside their villages, potentially attaining higher prices. In many cases, agricultural innovations have been proven to strengthen women's power to act. However, Farnworth et al. (2020) found that where households adopted improved maize varieties, women, particularly married women, could not maximize benefits due to men's dominance in decision-making. Women experienced fear in expressing self-confidence and showed low self-esteem and weak agency. The study also showed that "when married middle-income women report agency, this is typically in relation to tasks already perceived as within women's domain."

An evaluation of the N-Power Agro program for unemployed graduates of agriculture-related bachelor studies showed that young men (age 18-35) are more inclined toward farming and entrepreneurship and have a higher tendency to better utilize information and communications technologies (ICT) (Ogunmodede et al., 2020). As a result, 76% of the participants in the program

⁵ The interviews were conducted to inform a baseline study for the HortiNigeria program on youth challenges and opportunities in Oyo and Ogun states. <https://ifdc.org/projects/hortinigeria/>

⁶ The average age of the total sample is 29 years, and a higher percentage (76%) is male. About 58% of the respondents are married, with an average household size of four persons. About 74% have a formal education with an average of 10 years of education.

⁷ Based on interviews conducted with entrepreneurial women in the HortiNigeria program.

⁸ Interview with the founder of [Eweko Concept](#).

were men. About 60% of both groups of respondents (participants and non-participants) in the evaluation were single, which was assumed to lead to their engagement in entrepreneurship training, as they were less distracted by family members.

Examples from Ilu Titun village based on Petesch (2022) and Farnworth et al. (2020) and those from the N-Power Agro program evaluation based on Ogunmodede et al. (2020).



Photo Credit: Richard

Entrepreneurial Farmer at the Federal University of Agriculture, Abeokuta (FUNAAB)

2. Role of Policymakers and Formal Institutions for Youths' Inclusion in Horticulture

The Federal Ministry of Agriculture and Food Security (FMAFS) sees horticulture as a highly attractive sector for young men and women. Through the Renewed Hope Agenda, Action Plan for a Renewed Nigeria (2023), both public and private sector actors expressed an interest in the potential marketability and profitability of tomato, onion, pepper, cucumber, watermelon, and cabbage.⁹ The Action Plan points out that 35% of arable land in Nigeria is presently cultivated, and the target is to increase this to 65% in four years. If this increase comes from smart, evidence-based, and inclusive policies, large numbers of young men and women can be engaged in growing nutritious vegetables in efficient and profitable systems as well as in jobs and entrepreneurship along the horticulture value chain.

The enabling environment in Oyo and Ogun states includes public sector stakeholders, such as the National Institute for Horticulture Research (NIHORT), South-West Association of Vegetable and Fruit Sellers (SWAVFS) and the National Tomato Growers, Processors and Marketers Association of Nigeria (NATPAN), and private sector organizations, such as the Nigeria Agribusiness Group (NABG). They are engaged in various programs addressing important issues in the horticulture sector. They take action against resurgences of pests such as *Tuta absoluta*, conduct research and development programs, and pilot horticulture sector innovations.¹⁰ Increasingly, such actors are involved in

⁹ https://apc.com.ng/img/apc_renewed_hope.pdf

¹⁰ <https://ifdc.org/2023/05/01/experts-collaborate-to-combat-the-tomato-pest-tuta-absoluta/>

horticulture sector interventions that are targeted and tailored for youth through more in-depth graduation mechanisms and by setting more ambitious objectives in areas of empowerment.¹¹

Today's reality is that the policies and activities of formal institutions tasked with implementing or enforcing them involve long-term processes leaving more to be achieved. In contrast, when policymakers and national actors (e.g., ministries and financial institutions) design programs that target youths, they must react to young people's inherently quickly changing environments.

Nigeria's formal institutions must dissect and address youths' unique challenges if their policies and programs are to engage more young people in Oyo and Ogun in the horticulture sector. Conversely, young people themselves must be able to exert more influence over their enabling environment. They need platforms through which they can negotiate fairly with those in power to provide better education, cheaper agrochemicals and other inputs, more accessible markets, and affordable finance.

A key effort from Nigeria's public sector was the publishing of the National Youth Policy (2019). This broadly targets all young people in Nigeria, recognizing that they are not a homogeneous group in terms of needs and circumstances. It aims to provide a basis for interventions to appropriately address the specific and special needs of each of several identified target groups. In this regard, the policy categorized the target population into three groups: low-risk youths, vulnerable youths, and the most at-risk youths. It proposed several key actions to enable an increase in youth's involvement in agriculture, such as:

- Reviewing the national Land Use Act to give youths more access to land.
- Providing youths with land as incentive for them to engage in agriculture.
- Designating land in each state and local government area (LGA) for the establishment of Youth Agricultural Incubation Centers, Enterprise Development Centers, and a Youth Farm Settlement System.¹²
- Allocating at least 50% of lands in the River Basin Development Authorities to youth for agriculture.
- Creating a Youth Development Fund to allocate premiums for land and water use.

Deliberate efforts are required, else, policies like the National Youth Policy might lose momentum, are not implemented or monitored, do not contain enforcement mechanisms, and often remain a catch-all phrase for policymakers. With concise targets, the various public or private sector activities linked to the objectives of the National Youth Policy will reach or impact actors in the horticulture sector.

3. Addressing the Unique Challenges of Youths in Oyo and Ogun states

The challenges described above likely also affect young populations at large in Oyo and Ogun states. As close to 8 million people live in Oyo and around 6 million in Ogun, the number of young individuals in the youth age group (potentially) involved in agriculture is significant.¹³ Public and private programs that target them must consider their abilities and interests, and the horticulture sector is an example of how this can be done to motivate youth and to achieve equality and parity in farming communities.

Many front-running organizations have picked up the government's bill and are taking advantage of the large number of youths and the opportunities found in the horticulture sector. Aligned with the National Youth Policy's five cross-sectoral developmental pillars, Table 1 presents main players in the horticulture sector of Nigeria working toward the benchmarks initially envisioned in the policy.

¹¹ <https://tribuneonline.ng.com/nihort-graduates-youth-trainees-empowered-with-skills-in-irrigation-horticultural-farming/>

¹² The farm settlement system is a government initiative for promoting rural development by providing smallholder farmers resources and land for commercial farm operations. However, it has not been consistently implemented, and the large majority of farm settlements, which were established between 1955 and 1960, remain neglected. The government announced plans to invest and restore all nine farm settlements in Oyo State, starting with the Akufo Farm Settlement, which is set to receive a NGN 7.6 billion loan from the Central Bank of Nigeria. See: <https://www.afdb.org/fr/documents/nigeria-proposed-akufo-farm-estate-project-oyo-state-p-ng-aaa-002-esia-summary> and <https://www.premiumtimesng.com/news/headlines/655532-special-report-nigerias-farm-settlements-cry-for-attention-as-food-inflation-bites-harder.html>

¹³ <https://nigeria.opendataforafrica.org/>

Table 1. Examples of front-running actors in Oyo’s and Ogun’s horticulture sector

Selected objectives from Nigeria’s National Youth Policy	Examples of front-runners and their activities contributing to the policy’s objectives
Promote active youth involvement in agriculture for national food security, job creation, and social development.	At the national level, there are incentives to engage in agriculture, in spite of labor-intensive, low-paid jobs, and inadequacy, public programs are achieving effective and sustainable results in youth participation, e.g., the Anchor Borrower Programme. In contrast, some front-running and innovative entrepreneurs, such as BIC Farms Concepts and Soilless Farm Lab, have set up programs that make horticulture attractive and profitable by focusing on new technologies and by serving as role models. ¹⁴
Enhance agricultural extension services to 1:1,000 by 2020 and to 1:750 by 2022, with priority on youth in agriculture.	In 2022 Nigeria had one of the lowest ratios of extension officers to farmers (1:7,500), 10 times lower than the objective set in its National Youth Policy. ¹⁵ In response to the lack of extension support and services offered to farmers, commercial and non-profit advisory businesses, such as Eweko Concept and Onelife Initiative, are offering youth the required safe spaces, horticultural business support services, market linkages, and trainings on various soft and technical skills. ¹⁶
Sustain and scale up the delivery of credit to 1.6 million farmers by 2020 and 2 million farmers by 2022, including youths. Engage in innovative financing mechanisms to encourage diverse participation of youth in agriculture.	Almost 80% of Nigerian farmers perceive access to finance as difficult or very difficult, while younger people face the most difficult challenges in accessing affordable finance, which requires collateral, steady markets and credit history (Steemers, et al., 2022). The entrepreneurs mentioned above also found solutions for youths’ required short-term finance to cover expenses for a crop cycle (inputs and working capital). For example, Soilless Farm Lab , in partnership with Mastercard Foundation, enables young people to learn about the horticulture value chain and soilless farming for free, while co-owning and co-managing a soilless farm as part of a group. ¹⁷ Youth are connected to off-takers from the beginning, until they can grow their own businesses.
Create the Nigerian Youth Investment Fund (NYIF), with special focus on lending credits and grants to youth entrepreneurs and agripreneurs.	As of early 2024, some actors in the horticulture sector are not aware of any efforts to create it. In response, Sterling Bank, in partnership with the HortiNigeria program, targets young people in the horticulture sector through the SWAY AgFin loan product. ¹⁸ Through this engagement, the bank and HortiNigeria will reach more than 1,000 entrepreneurs and micro, small and medium enterprises (MSMEs) in Oyo and Ogun states. The objective intends to increase access to single digit loans to MSMEs active in the

¹⁴ <https://bicfarmsconcepts.com/> and <https://sfarmlab.com/>

¹⁵ <https://www.tasai.org/en/dashboard/cross-country-dashboard/>

¹⁶ See <https://ewekoconcept.com/services> and <https://onelifefirstinitiative.org/enterprise-development/>

¹⁷ <https://sfarmlab.com/EYiA/>

¹⁸ <https://sterling.ng/sway/>

	horticulture value chain. The SWAY AgFin loan product is designed to address women and youth unemployment by building sustainable businesses and encouraging standard agricultural practices, thereby reducing gender inequality.
Establish two Agribusiness Incubation Centers per zone.	Since 2021, the development of three hubs began in Oyo State. ¹⁹ The Afuko Farm Settlement, an 820 hectare farm, is under development in Oyo State and is being described as an Agribusiness Industrial Hub. The effort is led by the Oyo State Agribusiness Development Agency (OYSADA), a special purpose vehicle created to oversee implementation, funded by the Central Bank through its Commercial Agricultural Credit Scheme. ²⁰ It will eventually focus on producing, processing, and selling maize, cassava, and tomato. Another example is the Fashola Farm Settlement, which is under renovation to become the Fashola Agribusiness Industrial Hub. This is about 80% complete and already attracts private sector investors, such as FrieslandCampina. ²¹

Addressing youths’ challenges requires strong public and private sector leaders who engage in interactive processes with young men and women to give them a voice and increase their ability to set goals, access resources, make choices, and exercise their rights. In such processes, old policies and ways of doing business must be challenged, and deeply rooted power relations can be positively affected too. Such strong leaders exist, and the next section is focused on them.

4. The HortiNigeria Program and the horticulture sector’s Business Champions

Currently, several organizations and programs are striving for youth inclusion in horticulture in Southwest, Nigeria. The five-year HortiNigeria program identified location-specific entry points for addressing the resource and institutional barriers that limit the engagement of youth in the horticulture sector in Oyo and Ogun states. HortiNigeria aims to engage 2,000 young men and women in the two states and ensure their profitable and sustainable growth as business owners in the horticulture sector.

The program is working through 14 Business Champions, a group of innovative, resourceful, and courageous entrepreneurs, spearheading Nigeria’s horticulture revolution.²² They promote horticulture production to young people, train them, and provide support with creation of market linkages as well as access to agricultural inputs and finance. In recent years, these front-running Business Champions have capitalized on the ambitions of unemployed youths and on the demand for horticulture products. The combination of capacity building, access to land, inputs and finance provided thousands of young potential entrepreneurs with a launchpad in the horticulture sector.

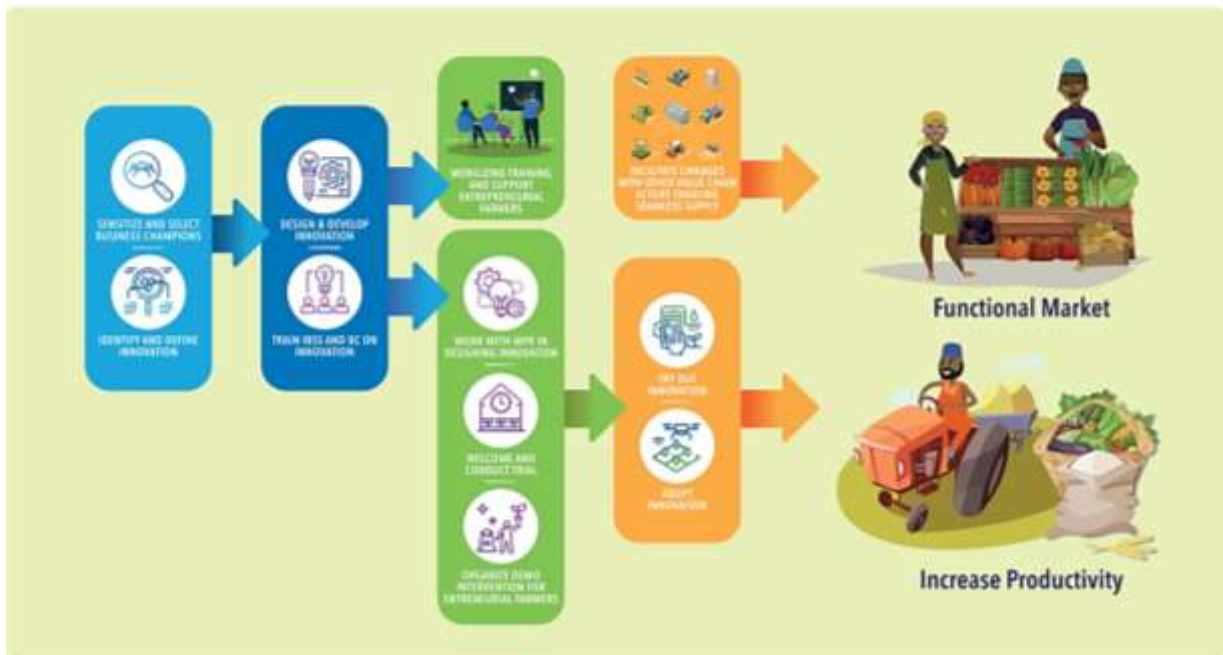
¹⁹ Fashola, Akufo, and Eruwa are three of the nine farm settlements that the Oyo State government started developing into agribusiness incubation hubs. <https://www.premiumtimesng.com/news/headlines/655532-special-report-nigerias-farm-settlements-cry-for-attention-as-food-inflation-bites-harder.html>

²⁰ <https://www.afdb.org/fr/documents/nigeria-proposed-akufo-farm-estate-project-oyo-state-p-ng-aaa-002-esia-summary>

²¹ <https://www.premiumtimesng.com/news/headlines/655532-special-report-nigerias-farm-settlements-cry-for-attention-as-food-inflation-bites-harder.html>

²² As of January 2024, the Business Champions included Euepsia Place Ltd., BIC Farms Concepts, Greenaly Enterprise, FUNAAB, Harvestyield, Kaspharyn Solutions, Integrated Aerial Precision, Feed the West, Farm Help Agrostores, Kartlos Farms, Solokad Multiventures, CKB, Ddee Farms, and Green Development.

Component 2: How we work



Piloting Innovation and Production Systems in Oyo and Ogun States

HortiNigeria’s onboarding interviews with the Business Champions revealed that these entrepreneurs have diverse business models but also share similar characteristics: they were already innovative, understood and owned innovation processes, and took initiative and made calculated risks in testing the market. Most of them already had an existing network with input suppliers, technology developers, offtakers, and other key value chain players.

Some Business Champions employ a holistic approach, with the production of commercial grade vegetables coupled with a comprehensive training model, the offtake of produce and identification of young producers with entrepreneurial capacities, and the supply of urban markets and clients with fresh high-quality vegetables. In the process, young people get a chance to learn about production, sales, marketing, business and financial topics and, most importantly, to innovate, professionalize, and distinguish their businesses through new technologies.

One such Business Champion is Samson Ogbole, whose company, Soilless Farm Lab, has already taken 12,000 young people through its vegetable production program. Participants “work, learn, and earn,” using technologies such as greenhouse farming (i.e., a climate-smart growing method that gives growers control over biotic and abiotic factors and enables off-season production and higher prices), soilless farming (also known as hydroponics, a growing method that does not depend on soil and allows the grower to grow year-round), advanced monitoring tools (machine learning and artificial intelligence for monitoring the irrigation of the plants and ensuring proper nutrient combinations), and integrated pest management (a combination of physical and biological control). Young people receive plots and form technical, agronomic, packaging and branding, logistics, and account management teams.



Picture Credit: Olabisi Ilebani

Samson Ogbole, CEO of Eupepsia, showcases Soilless Farm Innovation

One Business Champion is not the typical private sector enterprise but a university, the Federal University of Agriculture, Abeokuta (FUNAAB). The university community, with around 16,700 undergraduate and 1,100 postgraduate students, has a Department of Horticulture with 30 years of experience in vegetable production. FUNAAB aims to develop an inclusive horticulture value chain, grow the overall production volumes and incomes of horticulture farmers in Ogun State, and reduce the risk and impact of seasonality of horticulture crops. The university is working with HortiNigeria to pilot innovative production systems and to create business opportunities to systematically and sustainably improve youths' capacity and ambitions.

4.1. Innovation Hubs in the Horticulture Sector in Oyo and Ogun States

HortiNigeria's approach is to enhance the enabling and operational environments of the horticulture sector by forming hubs for agribusiness incubation and entrepreneurship around the Business Champions. The aim of the hubs is to accelerate the adoption of technologies and to foster inclusive business models favorable to women and youth. The hub model enables easy replication and scaling through (digital) information exchanges on agricultural practices and technologies, markets and prices, and many other topics of interest to the stakeholders.

Through the 14 hubs already established,²³ young entrepreneurs also get access to events and networks of key value chain players, such as financial institutions and agrochemical companies, which enables alignment of strategies and actions. Hub participants are co-learning and co-investing, using the latest results and best practices introduced by the Business Champions and by programs such as HortiNigeria and its international partners.²⁴

²³ HortiNigeria has a target of 20 hubs by the end of the program. No hub has yet been established around the 15th (latest) onboarded Business Champion.

²⁴ Hub participants can access information from each other and from the HortiNigeria program almost daily through WhatsApp groups. Each of the 14 hubs has a group, and information and advice are disseminated on production, marketing, branding, logistics, policies, etc. Other WhatsApp groups include HortiNigeria's Oyo group (30 members) and Ogun group (34 members), made up of input dealers, producers, transporters, and other horticulture value chain actors.



HortiNigeria Agribusiness Cluster Formation

Key actors onboarded by HortiNigeria are the Innovation and Business Support Service Providers (IBSSs). After a thorough selection processes, two IBSSs were chosen: Onelife Initiative and Eweko Concept. Box 3 illustrates the main activities of hub actors, using the example of FUNAAB.

Box 3. The FUNAAB hub

As a start, HortiNigeria and Onelife Initiative staff facilitated the mapping of the various actors and relationships between them. After the mobilization of potential participants, a meeting is organized to ensure that actors have a shared understanding of the hub concept. This is called a "Design and Diagnostic" workshop. For the FUNAAB hub, this workshop took place at the Continental Hotel in Ogun State. Participants first discussed various trends affecting the horticulture sector in their area. The FUNAAB hub members prioritized: (i) the high rate of emigration by entrepreneurial farmers and (ii) their interest in ventures that are quick money-making in nature.

Following a clear methodology, FUNAAB hub participants undertook the following activities:

- *Conducting a strengths, weaknesses, opportunities, and threats (SWOT) analysis, highlighting weaknesses such as the seasonality of vegetables, lack of offtakers and processors, limited access to finance, insufficient labor, and poorly organized farmer groups.*
- *Formulating strategies to address each of the identified trends and weaknesses through interventions areas such as market access, innovative technology, information access, contract farming documentation, farm labor, security, climate change, and quality of improved varieties.*
- *Developing a vision of the hub, which was jointly defined as: "To be a hub of competitive collaborators using sustainable innovation to unlock growth opportunities in the vegetable value chain, ensuring food security and incentivizing access for more production."*
- *Future-mapping of the hub to expand the number and variety of actors and their involvement in the next 3-5 years, focusing on the inclusion of youths and women.*
- *Drafting the present and future desired impact and operationalization using indicators, targets, and a measurement plan.*

HortiNigeria, through a series of scoping meetings organized with almost 50 public and private actors active in the horticulture sector in Oyo and Ogun states, defined and chose a number of production system innovations to be promoted for adoption by young people.²⁵ Some of these have already been adopted by commercial farmers in Nigeria's South West region, as the climatic and socio-economic factors have led to horticulture production already being more technologically advanced (e.g., compared to the northern states) (van den Broek et al., 2021).

The selection procedure considered youth (and gender) criteria related to norms, access to resources and benefits, division of labor, and decision-making. To choose the innovations, participants used the following criteria: easy to implement and scale, provision of environmental benefits, affordability, profitability potential, and ease of learning about use, implementation, and maintenance. So far, the program has trained 1,973 young people on 30 different innovations in 18 separate pilots:

- Innovations in production, such as integrated pest management, drip irrigation, seedling trays, hybrid seeds, soluble and insoluble fertilizer, controlled cultivation, soil and water testing, and plastic mulching.
- Innovations in the rest of the value chain, such as the use of crates and jute bags, solar-powered coolers, cooling vans, and solar dryers.
- Digital innovations, such as electronic payments, scaling supply chain tracking tools, and digital marketing.

By addressing the challenges described in this brief and adopting innovations, positive outcomes can be achieved in inclusion and empowerment, yields, quality (and losses), profits, and income.²⁶ To measure progress, limited data is available from recent studies in Oyo and Ogun. The baseline productivity for tomato production in open fields is low, estimated at 5-10 metric tons per hectare (mt/ha), while in greenhouses, producers can achieve up to 15 kilograms per square meter (kg/m²)

²⁵ HortiNigeria defined innovations as *knowledge, interventions, skills, or tools that help to perform horticulture production better, cheaper, with a view to frugality, sustainability, and improved profit.*

²⁶ Inclusion can be measured as the number of young people engaging in horticulture by choice while being empowered through various indicators. Empowerment is related to confidence in ability to succeed, the expansion of choice, and the strengthening of voice through the transformation of power relations, so youth have more control over their lives and futures. Power can be expressed in multiple ways: power within, power with, power over, power to, and power through (Galie and Farnworth, 2019).

per cycle (van den Broek et al., 2021).²⁷ Tomatoes are traditionally packaged in 50 kg baskets that are stacked on top of each other in large trucks. Several programs have aimed to introduce 20 kg reusable crates to the market, and while all actors see a clear reduction in food losses in transit using crates, market uptake still only covers around 50% of total tomatoes traded (depending on the season).

Horticulture sector stakeholders are forming larger and stronger partnerships for piloting and implementing these innovations and exchanging knowledge.²⁸ More young entrepreneurs are being mobilized and motivated, with every field day and event organized by public actors, Business Champions, and donor-funded programs. These efforts will undoubtedly lead to an impact on inclusion, and even empowerment, and early case studies show promising data on the positive effects from recent pilots on yields and profits.

4.2. Case Studies of HortiNigeria Entrepreneurial Farmers

Oyo and Ogun states have become very active testing grounds for innovations, which are already attracting more youth into the horticulture value chain. Highlighting the sector's opportunities requires sharing the results of pilots and projects. Early available data from HortiNigeria, presented as case studies of entrepreneurs in Oyo and Ogun, illustrates the effects of innovations on yields and profits, and their user-friendliness, accessibility and affordability.

Balogun Kamilat Omolola is a young businesswoman from Oyo State who was one of the winners in the 2023 International Youth Day competition.²⁹ Linked to Farm Help, one of HortiNigeria's Business Champions, Kamilat is the CEO of Kamroot Farms, an intensive two acre farm producing cucumber, tomato, and (soon) pepper. She produced cucumbers for a season without drip tape or a venturi injector (in 2022), but with the use of hybrid seeds, and obtained a profit of NGN 165,285. In the last season, adopting the two innovations, she doubled production and almost tripled profits from cucumber to NGN 449,815, a 272% increase (Table 1).

Table 1. Kamroot Farms case study – production data

Cucumber			
	Without Innovations	With Innovations (since 2023)	Difference (%)
Plants (No.)	2,500	3,400	
Bags harvested (No.)	48	98	104%
Bags per acre	24	49	104%
Production costs (NGN)	187,215	292,184	56%
Revenue (NGN)	352,500	739,000	110%
Profit (NGN)	165,285	449,815	172%

Key innovations used by Kamilat on Kamroot Farms are:

- Hybrid seeds, for improved yields.
- Drip tape, for easy and efficient supplying of water and nutrients to the plants; makes the farm non-dependent on rain and enables year-round production.
- Venturi injector, for easy and accurate supply of nutrients to the plants through the drip tape.
- Seed trays and coco peat, for a monitored and healthy nursery establishment.
- Herbicide, for easy and efficient control of weeds.

Kamroot Farms started producing tomatoes using all the innovations mentioned above. From 3,190 plants, 74 crates were harvested, resulting in a profit of over NGN 1.1 million (with only around NGN 160,000 in production costs). Production is influenced by the startup costs and market acceptability, which Kamilat managed to handle well. She is working toward introducing other innovations, such as mulching film, a solar water pump, and greenhouses (and related technologies). Her produce is sold in open markets in Ibadan, tomatoes in Akinyele and Bodija, and cucumber in Oje and Benjamin.

²⁷ Van den Broek et al. (2021) reported a baseline of 10-50 mt/ha for tomatoes grown in the northern states of Nigeria.

²⁸ The South-West Association of Vegetable Farmers and Sellers (SWAVFS) is one of HortiNigeria's latest partners (added to the program in February 2024), aiming to reach 1,000 young women horticulture farmers in Ogun.

²⁹ With 273 youths and women trained on cucumber production, the event organized by HortiNigeria with the support of Onelife Initiative offered an opportunity to upskill Nigerian youths on profitable agribusiness opportunities. <https://dailytrust.com/youths-learn-how-to-reap-benefits-of-cucumber-farming-in-90-days/>

Lawrence Kehinde is part of Great Mind Farmers Cooperatives, of the FUNAAB hub in Ogun State. Since 2009 he grows tomatoes, peppers, cucumbers and sweetcorn on his five acres. Lawrence started with little knowledge of GAP (e.g., spacing, improved seeds, nursery trays, IPM, etc.). Key innovations adopted since then are: drip irrigation and fertigation kit with venturi injector, seedling trays with growth media, hybrid seeds, staking of tomato and plastic crates. Lawrence, also benefiting from better prices, almost tripled production and achieved ten times higher revenues. He went from losing money to running a profitable farm. Considering his increased cost of production (NGN 1,9 million), Lawrence managed to obtain 200% higher profits (NGN 600,000) on each acre of tomatoes using innovations (Table 2).

Table 2. Lawrence Kehinde case study – production data for one acre of tomatoes

Tomatoes			
	Without Innovations	With Innovations (since 2020/21)	Difference (%)
Plants (No.)	4,000	10,000	
Baskets harvested (No.)	150	400	167%
Production costs (NGN)	850,000	1,900,000	124%
Revenue (NGN)	250,000	2,500,000	900%
Profit (NGN)	-600,000	600,000	200%

Baliqees Salaudeen-Ibrahim is a social and climate entrepreneur and activist, and since 2019 co-founder of Green Republic Farms Limited in Oyo State. The farm comprises 15 acres of tomatoes, peppers, cucumbers, cabbage and sweetcorn, and the main innovations adopted are greenhouses, soilless farming and smart drip irrigation and fertigation systems. Results from pilots with these innovations on Baliqees’s farm show that 1,000 kilograms of peppers can be harvested weekly from one acre (Table 3). Reducing the number of plants, and regardless of the higher input costs, has led to Baliqees turning profitable. From an average loss per hectare of NGN 190,000, she is now able to generate NGN 3,267,000 in profits.

Table 3. Baliqees Salaudeen-Ibrahim case study – production data for one acre of peppers

Peppers			
	Without Innovations	With Innovations (since 2023)	Difference (%)
Plants (No.)	11,000	1,667	
KGs harvested weekly	300	1,000	234%
Production costs (NGN)	283,000	2,133,000	654%
Revenue (NGN)	93,000	5,400,000	5,706%
Profit (NGN)	-190,000	3,267,000	1,819%

5. Conclusions: How to Capitalize on the Opportunities in the Horticulture Sector

Programs such as HortiNigeria are demonstrating time and again that the horticulture sector presents opportunities for young people, especially when farms apply innovations and technologies. Data on production and profitability from the farms of Business Champions and entrepreneurs illustrate horticulture’s potential for supporting prosperous lives. More data and training trajectories, such as those offered in HortiNigeria’s hubs, can motivate youth to engage in the sector and avoid other riskier pathways.

To address initial constraints (i.e., access to financial capital, knowledge, and markets), the actors described in this brief are supporting national programs, activities of public extension officers, and institutes, such as NIHORT. The roles of each of these actors in the horticulture sector must become clearer. Young men and women close to the hubs created in Oyo and Ogun states must be able to easily find specialized, accessible, affordable, and collaborative support.

Market players, such as the Business Champions, are innovating and inspiring segments of entrepreneurial youth. Through their pilots, and sharing of services, products, and knowledge in hubs, they pave the way for future investments in the sector. The data and frameworks being made

available can be used by policymakers or financiers to further develop the sector, tackle youth challenges, and develop the Oyo and Ogun horticulture sector.

Different types of actors should engage HortiNigeria and its partners from each hub created by the program, to capitalize on the following opportunities:

- Get a deeper understanding of young men's and young women's unique challenges and opportunities to support them through horticulture. In the innovation hubs, thousands of youths from Oyo and Ogun have gained access to land, knowledge, and resources. HortiNigeria showed that its model and ongoing efforts in the horticulture sector can be effective in addressing their challenges.
- Inform future investments in the horticulture sector innovations using the lessons learned by Business Champions, Entrepreneurial Farmers and other hub actors. HortiNigeria makes available insights into youth's adoption of innovations and their performance. To understand where and how to invest (e.g., tailored loans, equity in up-and-coming entrepreneurs, blended finance, etc.), investors should make use of publications of donor-funded programmes and knowledge of organizations such as IFDC.
- In turn, policymakers can draw inspiration from the youth that joined the horticulture sector, choosing to grow vegetables, trade or provide agri-inputs and other services. Data on producers and other value chain players can be further analyzed to see how many young men and young women engage by choice versus necessity, for policymakers to work towards improvements in the regulatory environment.
- To inform sector regulations and policies, decision makers can use early evidence from the hubs' pilots with technologies and innovations. This shows increased yields and profitability from growing vegetables in different production systems for different requirements and markets. Policies on the import of different vegetables and fertilizers and policies related to rural versus urban development should consider the potential of the horticulture sector in Oyo and Ogun. Policymakers can use the HortiNigeria program, and its learnings, to understand the sector's (potential) impact on young people.
- As a public or private organization with a mission of positive socio-economic change, joining an innovation hub provides access to a scalable platform of key mission partners. For example, national- or state-level policymakers or civil society organizations that are working on women's or youth's empowerment and transformation, tackling deep-rooted norms, can reach thousands of farmers and entrepreneurs. For some, the horticulture sector and the hubs' innovations have led to empowerment and can be used as examples. Others are on their way and need more support.

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