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HortiNigeria Program

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**Increase
Productivity
and Income**



**Pilot
Production
Systems and
Regional
Diversification**



**Increase
Access to
Finance for
SMEs**



**Enhance
Sector
Coordination
and Business
to Business
Linkages**

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Abbreviations and Acronyms

2SCALE	Towards Sustainable Clusters in Agri-business through Learning in Entrepreneurship
ABC	Agribusiness Cluster
ABU	Ahmadu Bello University
ACGSF	Agricultural Credit Guarantee Scheme Fund
ADP	Agricultural Development Program
AFGEAN	Agricultural Fresh Produce Growers and Exporters Association of Nigeria
B2B	Business to Business
BAGS	Boosting Agricultural Gains and Services
CBN	Central Bank of Nigeria
CSP	Collaborative Seed Program
DFI	Development Financial Institution
DMB	Deposit Money Banks
ECOWAS	Economic Community of West African States
EKN	Embassy of the Kingdom of the Netherlands
EWS-KT	East-West Seed Knowledge Transfer
FEPSAN	Fertilizer Producers and Suppliers Association of Nigeria
FGD	Focus Group Discussion
FMARD	Federal Ministry of Agriculture and Rural Development
GAP	Good Agronomic Practices
ICRA	International Center for Development Oriented Research in Agriculture
ICGL-DBN	Impact Credit Guarantee Limited of the Development Bank of Nigeria
IFC	International Finance Corporation
IFDC	International Fertilizer Development Center
KII	Key Informant Interview
KIT	KIT Royal Tropical Institute
LAPO	Lift Above Poverty Organization
LGA	Local Government Area
M&E	Monitoring and Evaluation
MEL	Monitoring, Evaluation and Learning
MFB	Microfinance Bank
NABC	Netherlands-African Business Council
NABG	Nigeria Agribusiness Group
NATPAN	National Tomato Growers, Processors and Marketers Association of Nigeria
NGO	Non-Governmental Organization
NIHORT	National Horticultural Research Institute
NIRSAL	Nigeria Incentive-Based Risk Sharing Systems for Agricultural Lending
NITT	Nigeria Institute of Transport Technology
NSIA	Nigeria Sovereign Investment Authority
OFPSAN	Organic Fertilizer Producers and Suppliers Association of Nigeria
PO	Producer Organization
RSSF	Real Sector Support Facility
S4C	Seeds for Change
SDGP	Sustainable Development Goal Program
SME	Small and Medium Enterprises
SWAGCO	South West Agricultural Company
TFO	Technical Field Officer
ToC	Theory of Change
ToT	Training of Trainers
WCDI	Wageningen Center for Development Innovation
WPR	Wageningen Plant & Research
WUR	Wageningen University & Research

Executive Summary

The start of a transformational journey.

On October 1, 2021, the Embassy of the Kingdom of the Netherlands (EKN), Nigeria, awarded the HortiNigeria program to the International Fertilizer Development (IFDC), and its consortium partners: East-West Seed Knowledge Transfer, Wageningen University and Research (WUR), and KIT Royal Tropical Institute. The program's implementation rolled out on the 1st of November 2021.

The cover page of this report shows the changes that have begun within the horticulture sector through the program's efforts to build a sustainable gender and youth-inclusive horticulture sector that will translate to improved food and nutrition security.

Within the last eight months from November 2021 to June 2022, HortiNigeria carried out activities, that have increased productivity and income through the introduction of eco-efficient production practices, identified climate-smart actions and innovative technologies to be promoted amongst entrepreneurial farmers, particularly women and youths, identified and kickstarted partnerships with financial institutions to improve access of value chain actors to financial services, identified and catalyzed dialogue with both private and public institutions within the horticulture and agricultural sector to resuscitate policy platforms and initiate actions required to build Business to Business linkages and enhance sector coordination. Figure 1 shows key performance highlights realized during the inception phase:

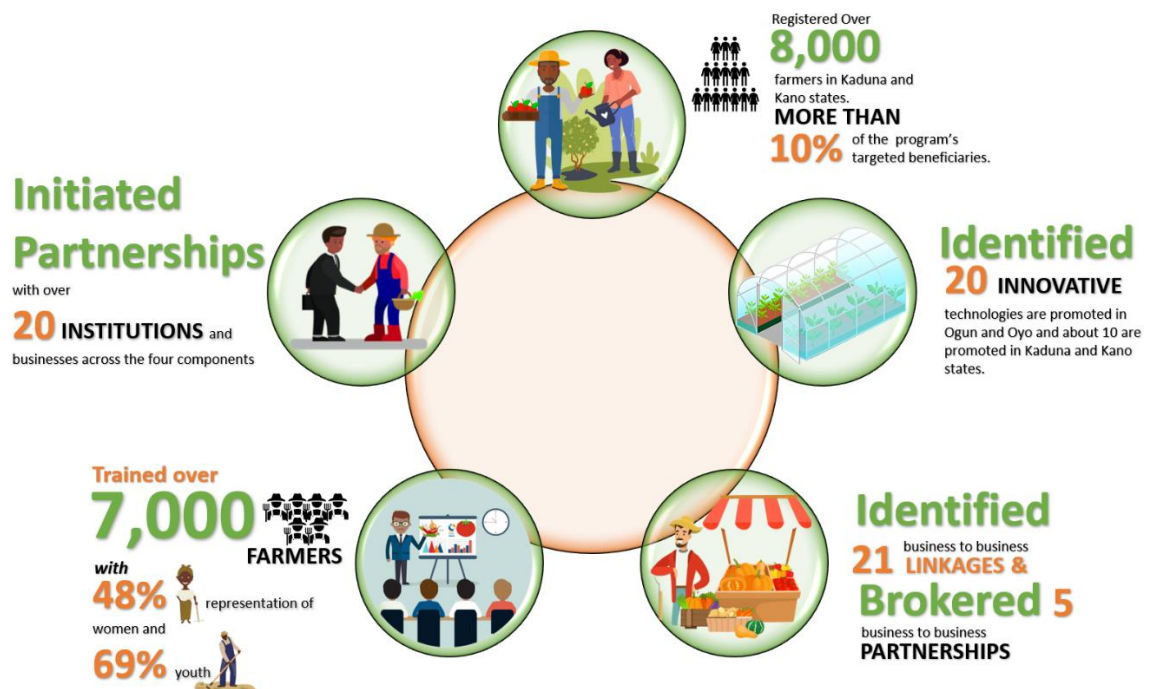


Figure 1. Highlights of HortiNigeria Performance during the Inception Phase

1 Introduction

HortiNigeria is a four-year (2021-2025) program funded by the Embassy of the Kingdom of the Netherlands (EKN) in Nigeria and implemented through a consortium involving the International Fertilizer Development Center (IFDC), East-West Seed Knowledge Transfer (EWS-KT), Wageningen University & Research (WUR), and KIT Royal Tropical Institute.

Our goal is aligned with the Dutch and Nigerian food security and private sector development objectives and fits within the framework of the larger transformation of food systems in Nigeria. The program will enhance the social capital and contribute to the empowerment of smallholder farmers and value chain actors, with a particular focus on women and youth, and it will incentivize value chains and support the sustainable integration of entrepreneurial farmers into profitable markets. Change will be fostered through scaling proven eco-efficient production technologies for sustainable intensification, deepening value chain relations and performance, and promoting innovation in the enabling environment.

With this goal in mind, since November 2021, several activities in Kaduna, Kano, Ogun, and Oyo states have been implemented within the seven value chains in the horticulture sector consisting of cabbage, cucumber, okra, onion, pepper, tomato, and watermelon through the four program components which are:

- Increasing productivity and income.
- Piloting innovation technologies and regional diversification.
- Facilitating access to finance for small and medium enterprises (SMEs).
- Enhancing sector coordination and business-to-business linkages.

During the inception phase, the transformation was ignited within the horticulture sector in targeted states using farm field-based and market-driven approaches to promote the adoption of eco-efficient production systems and facilitate improved access to and use of adequate agricultural inputs, good agronomic practices, and post-harvest technologies. In addition, HortiNigeria identified and kickstarted discussions with relevant actors (such as the Nigerian Institute of Transport Technology), in both private and public spheres to improve logistics, contributing to the transport, storage, and marketing of vegetable products. Also, the establishment of functional agribusiness clusters (ABC) was activated through trainings conducted in collaboration with International Center for development-oriented Research in Agriculture (ICRA). These ABCs will improve the production, planning, and marketing skills of smallholder farmers

Scoping exercises conducted through the various program components revealed bottlenecks, including the high rental cost of crates that has increased farm-gate prices and the effects of government policies, such as the tomato policy, were reported to be diminishing the sector's potential. However, concerted efforts with several financial institutions to improve financial services that will bolster SMEs to venture into opportunities created from identified bottlenecks as well as activation of platforms facilitating policy dialogues between actors were made.

In Kaduna and Kano states, HortiNigeria worked directly with more than 8,000 smallholder farmers (over 10% of those targeted). Focusing on reaching its goal of an inclusive horticulture sector, the program surpassed its targeted reach of involving and empowering women (48%) and youth (69%). In Ogun and Oyo states, the program has initiated identified 20 innovative technologies, prioritizing those that address challenges encountered by women and youth. Also, building on existing relationships, the program has implemented activities accelerating the pilot of production systems innovations. Since its inception, HortiNigeria has identified 109 entrepreneurial farmers and further classified their technology innovation needs through participatory validation exercises.

This report covers the period of November 2021 to June 2022, discussing the strategies deployed toward achieving the program goal, progress made, learnings gathered from program implementation, monitoring, evaluation, and learning plans as well as safety and security plan installed and used for effective and impactful implementation of the program.

2 Strategies, Progress, and Learnings During Program Implementation

As stated in the proposal, HortiNigeria's overall strategy supports the Dutch development policy, builds on lessons learned from Dutch-supported and other successful horticulture programs, capitalizes on existing structures and partnerships in Nigeria, empowers gender and youth inclusion, facilitates climate and environmental resilience, develops the private sector, and builds trust between value chain actors.

During the inception phase, HortiNigeria leveraged the experience and expertise of its Nigerian partners, and capitalized on the existing infrastructure and networks of all consortium partners.

Beyond the overarching strategy, specific component strategies were developed and deployed, leading to progress toward the program's goal across the targeted locations. Likewise, learnings have been gathered through program implementation. This chapter discusses each program's strategy developed and used, progress made, and learnings gathered in the inception phase.

2.1 Increasing Productivity and Income of Smallholder Farmers

Overview of Strategy

IFDC and EWS-KT, in collaboration with Wageningen Plant & Research (WPR), have jointly worked in the inception phase to lead and develop this component's strategy (see Annex VII for the detailed strategy). The team focused not only on increasing the productivity and income of smallholder farmers in Kaduna and Kano states, but also on building the capacity of selected Nigeria's public and private sector professionals, fostering the development of the well-equipped and trusted field teams required to nurture transformation within the sector. These sector professionals are staff of Public Extension Services, selected researchers, staff of non-governmental organizations (NGOs), Nigerian staff of partner companies of the Dutch breeding companies, agro-dealers, private sector partners in horticulture, and selected policymakers.

Since December 2021, the program team has hit the ground running, using elements of its strategy to engage smallholder farmers, exposing them to improved practices necessary for increased productivity and profitability. These elements include:

- Field-based approaches expose farmers to the use of simple but effective agronomic techniques via intensive hands-on training to prove the profitability from increased market-driven productivity.
- Improve access to better inputs and use these on smaller but intensively managed plots through catalyzing competitive supply of quality farm inputs via agro-dealers.
- Disseminate information on effective agronomic techniques to over 60,000 farmers via digital (Noman Lambu radio program on Arewa radio station, Kano), social, and print media.

Similarly, WPR kicked off implementation by deploying two approaches to build the capacity of sector professionals:

- Training of trainers (ToT) offers not only a basic course in vegetable cultivation, planning, economy, and farmer extension skills, but also a continuous learning and practical trajectory with refresher training, advanced training, and action research assignments. The learning objective of the sustainable vegetable production blended learning training program is to gain knowledge and skills on tropical vegetable production under smallholder farming conditions and to become well-equipped to train farmers on how to produce vegetables safely and effectively.
- Action research is an approach to closing the gap between scientific research and the complexity of agriculture and livelihoods, addressing real-world issues and practical problems. It relies on experiential learning and is a systematic approach to performing research in a practical environment, with direct input from farmers and agronomists. WPR foresees that 25 action research approaches will be developed for at least 50 trainees.

Building on its overall strategy, a special link with other Dutch-funded programs will be established. The experience of the Sustainable Development Goal Program (SDGP) will be tapped and shared within the community of practice. Also, the Collaborative Seed Program (CSP) will be working closely with HortiNigeria. More specifically, the topics related to Variety Promotion and Action Research of CSP will be actively aligned. The Seeds for Change (S4C) program, which is in its closing phase, will be used as a reference and a good example of a successful partnership with the private seed sector in Nigeria. HortiNigeria has offered a platform to the Dutch breeding companies with an interest in Nigeria. In some cases, through a linkage with CSP, Dutch seed companies will be requested to nominate Nigerian staff from their subsidiaries or their local business partner to HortiNigeria's ToT program.

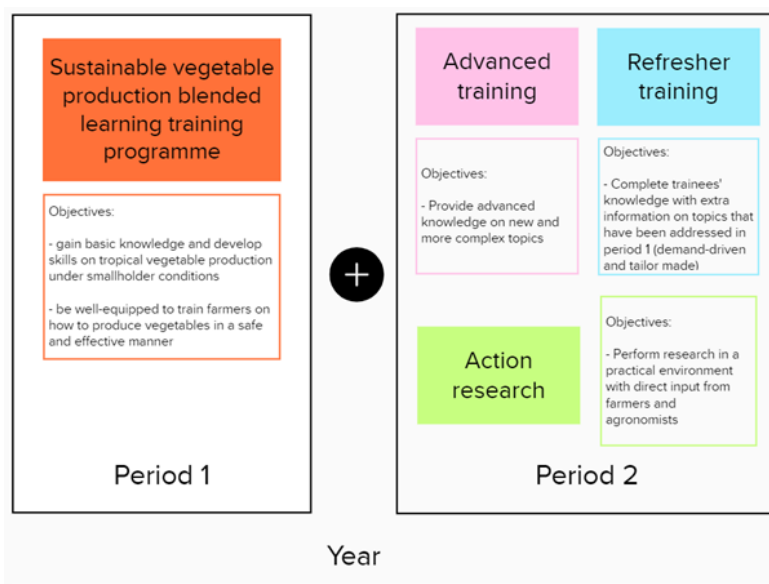


Figure 2. HortiNigeria Training Approach

The HortiNigeria Component 1 strategy also provides a detailed climate action strategy that is based on three parameters: sustainably increasing agricultural productivity, reducing greenhouse gas emissions, and adapting and building resilience to climate change.

These parameters are not limited to Component 1 alone but will serve as a guideline in promoting climate-smart actions during the program’s lifecycle. For example, Component 2 focuses on scaling such practices with the intent of reducing the cost of production and increasing profitability, while building production systems that are climate-resilient.

Implementation Progress under Component 1 during the Inception Phase

Throughout the inception phase, activities prioritized women and youth while establishing systems that enable environmentally sustainable production practices using practical field-based approaches to expose farmers to simple but effective agronomic techniques. Peer-led, market-driven field demonstrations were employed to train farmers on all aspects of crop production. Activity highlights under Component 1 involved: farmer engagement, extension, and advisory services as well as ABC development.

Farmer Engagement: As the program rolled out, a process was established to set up systems that will harness the high productivity and profitability realized from promoting eco-efficient practices, improving access to adequate inputs, and good agronomic practices. Farmer engagement was modeled through three stages: induction, training, and dissemination. The schematic diagram below depicts the activities under this model (Figure 3).

In HortiNigeria, smallholder farmers are categorized into three groups: key farmers, core farmers, and neighboring farmers.* Farmer selection begins with the identification and selection of key farmers following specific selection criteria:

- Willingness to offer a piece of land for training/learning purposes.
- Provision of water.
- Accessibility to the farm by other farmers
- Willingness to share knowledge with other farmers.

Furthermore, the program’s approach to building an inclusive sector involves the introduction of vegetable production to new farmers. Experiences in Nigeria (and some other countries) show that the inclusion of non-vegetable farmers in training programs creates opportunity, especially for youth and women.

**Key farmers are provided with intensive field-based support for the first 12 months. Their fields serve as demonstration plots to show other farmers how techniques can improve crop quality and yields. Core farmers are confirmed at the end of the crop cycle. This is because most farmers do not join program activities until the vegetative stage, where they can see the benefits of the eco-efficient practices. Neighboring farmers join training sessions but are not consistent with their participation.*

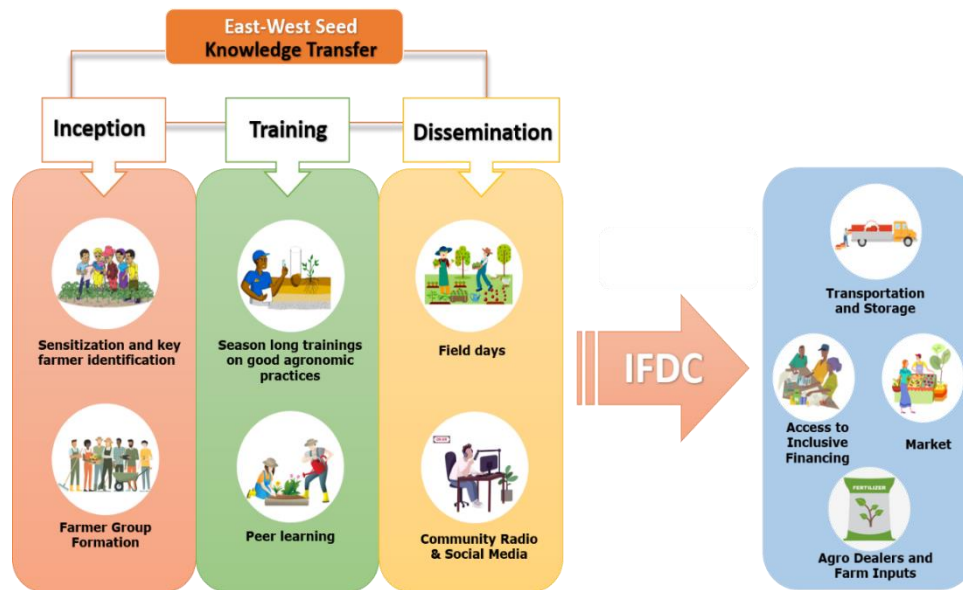


Figure 3. HortiNigeria Farmer Engagement Model: Induction, Training, and Dissemination

Induction phase: The program leveraged the strong presence of the program’s Technical Field Officers (TFOs) and sensitizing farmers and facilitating the formation of Producer Organizations within the program’s geographic focus of Kudan, Zaria, Sabon gari, Soba, Markarfi, and Kubau in Kaduna State and Kumbotso, Dawakin Tofa, Dawakin Kudu, Rimin Gado, Minjibir, Garko in Kano State. Although Giwa, Igbabi and Ikara Local Government Areas (LGAs) were listed in the proposal, these areas were excluded from the list due to the high level of insecurity. A total of 8,405 smallholder farmers have been registered within the inception phase; 7,301 farmers have received training (48% female and 52% male).

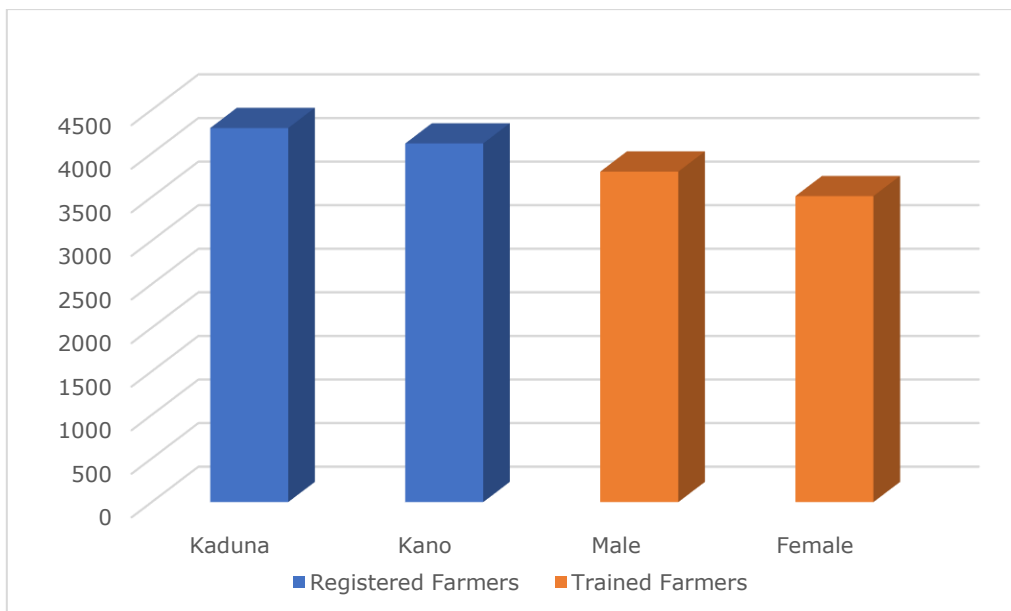


Figure 4. Farmers Registered and Trained during the HortiNigeria Inception Phase

Training phase: To boost the productivity and income of producer organizations (POs), demonstration plots and extension tools were implemented and a digitized farm management system was developed and deployed by the program team. HortiNigeria benefits from cutting-edge extension material and digital tools, which have been jointly developed and tested by the consortium over the previous years. Training topics involved crop economics, use of improved varieties with resistance to abiotic stress and disease pressure, seedling raising, land preparation, improved

seedling production, transplanting and field layout, organic mulching, trellising, irrigation and water management, integrated pest management (IPM), safe and judicious use of pesticides, nutrient management, and harvesting and post-harvest handling.

Through demonstrations that enabled peer learning, farmers were exposed to profitable and easily replicable practices on small plots of (250 square meters [m²]). A calculation of the return on investment (ROI) showed a more than 50% increase, on average, across all the crops demonstrated (see Table 1). These demonstrations also showed considerable improvement in yields compared with traditional practices; for example, a previous study had shown tomato yields at only 7 metric tons per hectare (mt/ha) and okra at 6 mt/ha (WUR sector study).

Although the demonstration plots are only 250 m², the techniques are relatively easy to scale up. Considering that most “traditional” farmers are producing on relatively larger plots (0.5-1.0 ha), farmers can easily get the same yield but better quality on smaller, more sustainable plots. Tomato planted on 1,500 m² under good practices will yield the same results as a full hectare, enabling farmers to produce on smaller plots, improving sustainable land use.

Table 1. Return on Investment on the Crop Varieties Promoted During the Inception Phase

Crop/Variety	Avg Area (m ²)	Avg No. of Plants	Avg Total Production (mt/ha)	Avg Cost (Euros)	Avg Return (Euros)	Profit (Euros)
Cabbage (Nuzaka F1)	250	659	39.32	40.47	102.74	62.27
Cabbage (Pkase)	250	666	46.64	38.95	88.92	49.96
Cucumber (Greengo F1)	250	666	45.4	53.46	121.93	68.47
Cucumber (Mona LisaF1)	250	666	44.8	47.74	157.19	109.44
Okra (Basanti)	250	445	13.12	23.80	81.77	57.97
Okra (Maha)	250	443	17.68	26.75	101.57	74.81
Onion (Dayo)	250	6,666	26.4	26.89	160.96	134.07
Onion (Prema F1)	250	6,630	22.56	25.42	136.34	110.92
Onion (Super Yali)	250	6,474	22.32	26.63	117.81	91.17
Tomato (Diva F1)	250	666	25.76	37.25	210.05	172.80
Tomato (Platinum F1)	250	659	44.64	43.38	147.78	104.40
Watermelon (Sweet sangria F1)	250	179	31.2	26.19	130.74	104.54

Of the registered farmers, 80% have participated in three to five training sessions and more than 614 training sessions have been conducted. Over 7,000 farmers have been trained, with 52% male and 48% female participation and 69% youth representation.

Dissemination phase: To bolster knowledge dissemination, 109 field days were held during harvest on demonstration fields to share technical information on crop production and marketing information. Table 1 shows the vegetable crops and varieties used for the demonstration plots, with their average cost of production and ROI for a 250 m² demonstration plot.

Digital solutions were used to reach a broader scale of women and youth and to complement field-based activities. Social media platforms, such as WhatsApp, Facebook, and YouTube, were used to engage farmers, equipping them with knowledge on improved farming techniques.

The EWS-KT site (<http://growhow.eastwestseed.com/>) also provides information, targeting farmers with smartphones. EWS-KT also moderates a lively daily interaction through its Facebook platform [Noman Lambu](#), which has more than 20,000 followers. This is particularly strategic for engaging younger farmers into Component 1 activities by showcasing the success of their peers.

Other materials adapted to the local language of the actors were distributed in hard copy to guide their practices.

In April 2022, a virtual field day was held to showcase HortiNigeria fields in Kano and Kaduna states to farmers in the diaspora. Farmer participants from Nigeria were also joined by farmers from other countries, including Bangladesh, Philippines, Tanzania, Thailand, and Uganda. Similarly, HortiNigeria participated in a Tomato Jos field day in Kaduna; this activity established a linkage between HortiNigeria farmers and the tomato processing company.

A regular bi-weekly radio program was launched on June 16, where farmers receive training on vegetable production in the evenings. HortiNigeria Technical Field Officers led the sessions.



Figure 5. HortiNigeria's First Live Radio Program in Kano State

Development of Extension and Advisory Services: HortiNigeria will facilitate and build quality extension and advisory services by building the capacity of agro-input dealers within intervention areas. During the inception phase, the program identified 84 agro-input dealers and trained 25 of them on three topics. Trainings were carried out both online and in person. The online event targeted agro-dealers located within the last mile to the farmers. The trained dealers were equipped with the knowledge and capacity needed to foster improved access and availability of inputs, boosting higher demand, use, and productivity.

Agribusiness Clusters: This subcomponent is led by IFDC under Component 1. HortiNigeria will facilitate ABC formation around demonstration sites. These clusters will link farmers and farmer groups with input retailers, aggregators, traders, and other service providers.

From February to June 2022, activities catalyzing the development of ABCs were implemented, which involved the identification of farmers, training and mapping of agro-dealers, and identification and mapping of other service providers. Over 1,000 actors in the value chain (excluding farmers) were identified and a database profiling them was established.



Figure 6. Training of Coaches and HortiNigeria staff by ICRA in Kano State

In June, a three-day training for coaches, led by ICRA, was held in Kano State. Training topics focused on building the capacities of coaches to train value chain actors within local networks. Coaches are then responsible for providing training for farmers and other actors. These step-down trainings will strengthen the trust, efficiency, linkages, negotiating, and networking capacities invariably developing ABCs that can serve high value developing markets.

Through the series of activities discussed above, HortiNigeria has gathered learnings from its implementation process. It is anticipated that the knowledge gained will influence the execution of activities as the program progresses. The subsequent section of this report discusses these learnings and recommendations on way forward.

Learning

Table 2 highlights the lessons learned during the inception phase. These lessons have been classified by problems, issues, effects, and recommendations. The problem states a generic challenge encountered during the inception phase, the issues are the external dynamics exacerbating the

preexisting problems, the effects are the direct consequences on program implementation, and the recommendations state ways the program can address the problems.

Table 2. Learnings Gathered under Component 1 during the Inception Phase

	Category	Problem	Issues	Effect	Recommendations
1	Demonstration field management	Insecurity	Exclusion of preselected intervention locations stated in the proposal such as Giwa, Igbabi, and Ikara LGAs in Kaduna State.	Inability to reach farmers in these targeted areas	Identify and target other high-value vegetable production locations
2	Demonstration field management	Water scarcity	Closure of Kano irrigation scheme due to maintenance of infrastructure.	Increased cost of irrigation and total production cost, with reduced yield due to insufficient water	Facilitate POs to jointly invest in tube wells Pilot water-saving technologies, such as drip irrigation
			Reduced water supply from water bodies such as dug wells and streams in April, which is the peak of the dry season and the fruiting stage of crops in Kaduna.		
			70-80% of farmers in intervention locations in Kaduna and Kano do not have wells to irrigate farms.		
3	Demonstration field management	Hike in price of fuel	The high cost of fuel increased transportation costs and discouraged farmers from investing in and using simple irrigation machines, such as tube wells, and increased total production cost with a reduced profit margin.	Low yields and profit	Pilot solar pumps in a strategic area in the communities with a cluster of farmers to increase their knowledge on the benefits of the technology
4	Demonstration field management	Theft of farm produce	The high price of some crops, such as watermelon and tomato, in certain seasons increases the rate of crop theft.	Revenue loss	Facilitate linkage between farmers and local trained security/watchmen.

	Category	Problem	Issues	Effect	Recommendations
5	Demonstration field management	High cost of farm inputs	Unavailability, scarcity, and high cost of some inputs, such as NPK 15:15:15 and muriate of potash (MoP), affected farm operations and increased the cost of production.	Reduced yield and low profit	Pilot alternative approaches to improve soil health and fertility, such as the use of green manure, vermicompost, and alley cropping.
6	Demonstration field management	Mobilization of farmers to the training venue	Inconsistent attendance in training, hence difficulty in classifying some farmers as core farmers	Low participation of smallholder farmers.	Engage Extension agents (EAs) for mobilization of farmers.
7	Agribusiness clusters	Weak linkages between actors in the sector	<p>Though several actors are present within the geographical space, linkages that can boost a significant increase in productivity or facilitate market access/marketing are weak.</p> <p>The lack of existing linkages has been observed to be the result of a lack of trust between the actors.</p>	Low productivity and income for both farmers and local entrepreneurs	Increase trust by sharing the results of some successful linkages (in quality access to inputs/selling of products against a fair price, etc.).

	Category	Problem	Issues	Effect	Recommendations
8	Smallholder farmers	Selection of farmer participants	Due to the initial doubt and skepticism farmers have about new farm practices, there is slow engagement of farmers into program activities at the beginning of a cropping cycle of a community; however, this system of selection is not compatible with the monitoring system developed by KIT.	Farmers expected to sign up at the beginning of the cropping cycle may drop out of the program. Other farmers may miss the opportunity to join at the beginning because of a lack of interest. The risk is that both sets of farmers will not receive the full trainings required.	The monitoring system should be designed around the training approach.

A significant learning gained in the inception period for Component 1 centers around demonstration field management. Observations show the need to pilot innovative technologies among smallholder farmers. These innovations include:

- Water-saving technologies, such as drip irrigation.
- Solar pumps located in a strategic area within the communities with a cluster of farmers to increase their knowledge on the benefits of the technology.
- Alternative approaches to improving soil health and fertility, such as the use of green manure, vermicompost, and alley cropping.

Therefore, piloting of innovative technologies should be carried out where necessary with smallholder farmers in Kaduna and Kano states, to increase their knowledge of and capacity in such technologies, reducing the high cost of production, and boosting productivity over the long term.

2.2 Piloting Production Innovation Systems and Regional Diversification with Entrepreneurial Farmers in Ogun and Oyo States

Overview of Strategy

Similar to Component 1, a strategy was developed and deployed for Component 2 during the inception phase. The strategy of this component was developed by harnessing the experiences of existing networks, partnerships, and programs, envisioning program activities to be built on a sustainable framework.

During the inception phase, the HortiNigeria team succeeded in cataloging and validating viable innovations for promotion under Component 2, employing two instruments:

- **Scoping study:** The scoping study was done using desk study, engagement, and interaction with stakeholders through phone calls, site visits, and visits of IFDC and EKN teams to the region (Oyo, Ogun, and Lagos).
- **Validation exercise:** In facilitating participatory technology development, peer learning, co-innovation, and co-investment, the identified technologies were validated along with the full participation of stakeholders, comprising entrepreneurial farmers, innovation drivers, research institutions, and other stakeholders.

Furthermore, HortiNigeria embedded the Toward Sustainable Clusters in Agribusiness through Learning in Entrepreneurship (2SCALE) proven model of building market-led public-private partnerships (PPPs) to drive and scale up innovations in Ogun and Oyo states. These partners are referred to as business champions.¹ Through the scoping exercise conducted in March 2022, HortiNigeria identified seven business champions (Ogun: 4; Oyo: 3). These business champions are currently undergoing screening to identify the best fit for the program.

Implementation Progress under Component 2 during the Inception Phase

During the past eight months, HortiNigeria focused its effort on implementing several activities to spark a transformation of the horticulture sector in Ogun and Oyo states. The program’s vision of scaling innovations to achieve a high return on investment is underway.

Identification of Demand-Driven Innovation Technologies and Practices: Under this component, HortiNigeria recognizes its critical role in fostering the introduction of innovative technologies necessary to scaling up investments in commercially viable production practices, invariably reducing the risk of seasonality. Therefore, efforts were focused on identifying, selecting, and scaling demand-driven innovations (Figure 7) throughout the inception phase.

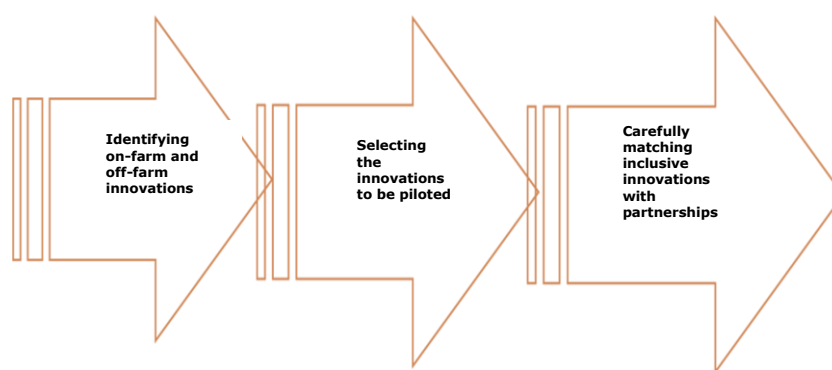


Figure 7. Implementation Flow of Innovations

In consolidating the process of identifying innovations, dynamics such as the intervention locations, presence of entrepreneurial farmers within innovation locations, and proximity to the market of Lagos, were considered.

Unlike Component 1, which had specific predetermined LGAs before the program rollout, LGAs in Ogun and Oyo were identified and selected during the inception phase. A total of 17 LGAs in Ogun (7) and Oyo (10) were selected, as shown in Figure 9. The primary criterion for the selection of these locations was the availability of entrepreneurial farmers² in Ogun and Oyo states. Under Component 2, these farmers play a vital role in ensuring commercial viability and increasing continuity in supplying vegetables to Nigeria’s largest markets in Lagos.

Through a scoping study, HortiNigeria identified entrepreneurial farmers with the technical capacity and the entrepreneurial skills to pilot market-driven horticulture innovations. A significant milestone in the inception phase involved the identification and selection of 109 entrepreneurial farmers, screened using the checklist in Table 3.



Figure 8. Cross-Section of Participants in a Scoping Validation Exercise in Ogun State

¹ Business champions are private SMEs who serve as innovation boosters within respective intervention hubs, or agribusiness clusters.

² HortiNigeria defines an entrepreneurial farmer as a farmer who grows horticulture crops for a market segment.

actors. Key Informant Interviews (KIIs) and Focus Group Discussions (FGDs) were used in this process. Innovations identified were classified into three:

Production-based innovations: These innovations are used at the farm level to increase productivity.

Value chain-based innovations: These innovations involve a wider variety of stakeholders, such as input dealers, farmers, offtakers, middlemen, transporters, food processors, marketers, and distributors.

Business-supporting innovations: Business-supporting innovations are related to digitization of the sector, financing, and extension. For example, information services could provide farmers with relevant information, such as weather forecasts, market prices, and demand, particularly through digitized channels such as SMS or the internet

As the program evolves, HortiNigeria intends to adopt and adapt the agribusiness model in Ogun and Oyo states, develop the mapped-out entrepreneurial farms into incubator hubs. These hubs will accelerate the adoption of technologies, bolster business-to-business linkages, and foster an inclusive business model favorable to women and youth. Discussions are ongoing with identified business champions on modalities of how to develop viable hubs.

In the inception phase, the innovative technologies in Table 4 were identified and validated.

Table 4. Identified and Validated Technologies to be Piloted in Ogun and Oyo states

S/No	Technology Innovations
Production-Based Innovations	
1	Integrated pest management
2	Drip irrigation
3	Seedling tray
4	Hybrid seeds
5	Soluble fertilizer
6	Insoluble fertilizer
7	Controlled cultivation
8	Open field
9	Soil and water testing
10	Plastic mulching
Value Chain-Based Innovations	
11	E-payment
12	Scaling
13	Accredited marketing agents
14	Supply chain tracking
15	Crates
16	Jute bags
17	Solar-powered coolers
18	Cooling van (transportation)
19	Solar dryer
Business-Supporting Innovations	
20	Digital Marketing

Similarly, the program documented learnings gained in the program’s implementation, which are discussed in the subsequent section.

Learnings

Table 5 highlights the lessons learned under Component 2 during the inception phase. These lessons are categorized by problems, issues, effects, and recommendations. The problem states a generic challenge encountered during the inception phase, the issues are the external dynamics

exacerbating the preexisting problems, the effects are the direct consequences on the program implementation, while recommendations state ways the program can address the problems.

Table 5. Learnings Gathered under Component 2 during the Inception Phase

	Category	Problem	Issue	Effect	Recommendations
1	Entrepreneurial farmers	Limited innovation champions	Low awareness and use of innovative technologies Limited exposure to high productivity practices	Low spread of knowledge and information	Identification and training on production system innovations.
2	Entrepreneurial farmers	Lack of coordinated interventions involving stakeholders	Poor optimization of existing innovative technologies such as green houses.	Poor maximization of profitability	Demonstration/piloting of production system innovation using an inclusive market-driven model.
3	Entrepreneurial farmers	Abandoned green houses	Lack of capacity and skills to manage green houses	Low maximization of innovation technology	FUNAAB come up with courses on greenhouse management

Implications Learnings gained under Component 2 centered around existing technologies identified in the intervention locations. Though the awareness of innovative technologies, such as greenhouses, is high in the southern states, as opposed to the northern states, their potential has not been harnessed optimally, leading to a loss of investments. Going forward, HortiNigeria intends to partner with the Federal University of Agriculture, Abeokuta (FUNAAB) and other organizations to develop courses on greenhouse management, improve the availability of required skills, and foster job creation in the states.

2.3 Increasing Access to Finance for SMEs

Overview of Strategy

Sustainable adoption of eco-efficient practices and innovations and expansion to wider markets that will accelerate regional diversification hinges on access to finance, as limited financial management capacity and access to finance are the main obstacles for smallholder farmers and other value chain actors in the horticulture sector to scale up.

During the inception phase, HortiNigeria developed its access to finance strategy. Through this strategy, the program has identified and intends to match available tailor-made financial products and services with actors within the value chain, including women and youth.

The core of the strategy aims to improve and expand economic and financial inclusion, improve access to insurance, and where possible access to health services. This will make businesses in the value chain more viable, and hence, bankable.

Considering the above, HortiNigeria initiated various modalities under Component 3 to overcome barriers to accessing finance through the following objectives:

- Increasing the bankability and credit worthiness of SMEs by building trust among value chain players in the ABCs developed through Component 1.
- Changing the negative mindsets and mitigating risks to strengthen the appetite of commercial financial institutions toward horticulture sector lending.
- Building the managerial and financial investment skills of micro-, small-, and medium-size enterprises (MSMEs) to boost investors' confidence.
- Ensuring women and youth inclusion in access to financial services, reaching 40% of women-managed and 50% youth-managed SMEs, while creating additional jobs (50% female and 50% youth).

To achieve these interventions, Component 3 seeks to influence both the demand side (beneficiary MSMEs) and supply side of financial services to create some marketable traction. Table 6 shows the financial services on both the supply and demand sides that the component will focus on.

Table 6. Financial Services on Both Demand and Supply Sides

	Demand	Supply
1.	Expand market opportunities for smallholder farmers through digital finance solutions (mobile money, e-transfers, e-banking, insurance).	Match available formal/informal financial services that by design have the potential to address the financial needs of the program's target groups.
2.	Improve financial literacy and technical capacity of beneficiary businesses.	Present profitable bankable proposals to financial institutions.
3.	Maximize savings and capitalization strategies.	Deploy risk mitigation measures to increase investors' confidence in program-supported value chains.
4.	Facilitate physical linkages with financial institutions for access to financial services.	Negotiate with financial services providers for affordability, e.g., low interest charges.
5.	Facilitate risk-sharing through value chain financing.	
6.	Tailor suitable financial interventions.	

The detailed access to finance strategy is provided in Annex VI, showing various modalities and examples of financial mechanisms identified and developed for actors across the value chain in the inception phase.

Implementation Progress under Component 3 during the Inception Phase

Given the heterogeneity of the various actors and partners HortiNigeria is working with, activities in the inception phase focused on understanding the available financial institutions and their products, enlightening actors about the program's ambition and understanding their needs as well as working with various component leads to facilitate tailor-made finance instruments to actors.

Sensitization of Targeted Actors: In March and June, virtual sensitization sessions for targeted actors (smallholder farmers and entrepreneurial farmers) were conducted. A WhatsApp platform was launched to enlighten farmers on the financial mechanisms the program will deploy and facilitate their interaction with the Component Leads. Continuous awareness-raising will be done throughout program implementation to improve knowledge and change mindsets and attitudes. Other communication tools, such as leaflets, social media, radio programs, and physical meetings, will also be used.

Identification and Review of Financial Institutions and Products: HortiNigeria has initiated a comprehensive scoping study, needs assessment and value chain analysis to identify SMEs, understand financial flow volumes within the entire value chain and provide insight into existing financial models. Nonetheless, preliminary studies done in the inception phase gave insights into financial institutions and products the program can work with:

- Apex Regulatory Financial Institution: Central Bank of Nigeria (CBN).
- Deposit Money Banks (DMBs): Wema, Taj, Sterling, Zenith, JAIZ, Polaris, Access, First City Monument Bank.
- Development Finance Institutions: Bank of Agriculture, Bank of Industry, Development Bank of Nigeria, Bank of Industry, African Development Bank, Small and Medium Scale Enterprises Development Agency of Nigeria.
- Microfinance Banks: Lift Above Poverty Organization (LAPO), Halal Credit Microfinance Bank, Kuda Microfinance Bank, Yadilan Investment Limited.
- Management Consultancy Firms: IBY Consultants, Corporate Consultants, JMSF Agri-business Consulting, YHAL Consultants, Verde Consultants.
- Financial Services Advisory Brokers: PULA Insurance advisors, JMSF, Verde

Following the review of the financial institutions, the Development Finance Initiatives (DFIs) of the Central Bank of Nigeria, in collaboration with DMBs and MFBs, were highlighted to design various intervention funds targeted at boosting income and employment generation in the agriculture sector, giving priority to women and youth.

Table 7. Identified Central Bank of Nigeria Development Finance Initiatives HortiNigeria Intends to Leverage for Targeted Actors

	Financial Products	Features
1.	Agricultural Credit Guarantee Scheme Fund (ACGSF)	A 40% interest drawback incentive. Concession on loans without collateral is 100 million naira . Concession on loans with collateral is 50 million naira.
2.	Agricultural Credit Support Scheme	A 50-billion-naira CBN-controlled government program. Established to render agricultural loans to agro-allied entrepreneurs to increase foreign and local revenue.
3.	Commercial Agriculture Credit Scheme	A 200-billion-naira bond. Established in 2019 by the CBN in conjunction with the Ministry of Water Resources. The objective is to finance value chains in Nigeria.
4.	Real Sector Support Facility (RSSF)	A 300-billion-naira facility to support large entrepreneurs for start-ups and expansion financing needs. The objective of the fund is to fast-track investments in the development of real sector, increase output, diversify the revenue base, and increase foreign exchange.
5.	Micro, Small, and medium enterprise (MSMEs)	A 200-billion-naira seed capital for MSMEs. A 60% earmarked as gender inclusive financing.

Identification of and Networking With Financial Institutions to Improve Financial Literacy:

During this inception phase, HortiNigeria initiated discussions with institutions, such as the Nigerian Incentive-based Risk Sharing System for agricultural lending of the Central Bank of Nigeria (NIRSAL-CBN), Impact Credit Guarantee Limited of the Development Bank of Nigeria (ICGL-DBN), and the National Collateral Registry of the CBN supported by the International Finance Corporation (IFC), to bridge the widening gap between access to credit and target actors. The program recognizes that financial inclusion goes beyond possessing a bank account, but entails delivering and using a full range of financial services at affordable costs to all, with priority to segments of society with low financial net worth. Therefore, HortiNigeria aims to invest in this stratum of the society through knowledge/awareness creation to catalyze access to financial services. Essentially, financial literacy will invariably narrow the gaps in financial access and boost investor confidence in the sector, which will further strengthen trust and improve transparency between horticultural agribusiness value chains and financial actors.

Facilitating Access to Financial Services: Both smallholder and entrepreneurial farmers have started to benefit from financial services facilitated by HortiNigeria. Discussions with JAIZ, Sterling, Taj, and Zenith banks were held in the inception phase to enroll smallholder farmers for opening bank accounts, making them eligible to access other financial services. This process was the kickoff for actors in Component 1.

Similarly, initial discussions for potential financing deals worth over €290,000, with financial institutions including Wema, JAIZ, Zenith, Taj, Sterling, and Polaris, were carried out. Two actors identified from Components 2 and 4 – Kartlos Farms Limited, an entrepreneurial farming operation, and Bunkasa AgriTech, an oftaker – have been facilitated to access credit in the third quarter of 2022.

Learnings

Table 8 lists the lessons learned under Component 3 during the inception phase. These lessons are categorized by problem, issue, impact, and recommendations. The problem states a generic challenge encountered during the inception phase, the issues are the external dynamics exacerbating the preexisting problems, the effects are the direct consequences on the program implementation, while recommendations state ways the program can address the problems.

Table 8. Learnings Gathered under Component 3 during the Inception Phase

	Category	Problem	Issue	Effect	Recommendation
1	Smallholder farmers	Low level of literacy Lack of financial literacy Subsistence standard of agriculture	The revenue-generating aspect of agriculture is underutilized; thus, farmers are not practicing agribusiness because of a lack of awareness and a proper coordinating system.	Poor access to agribusiness development support	Training on good agricultural practices (GAPs), business, and financial management must be tailored to the understanding of farmers. Coaches need to be trained to offer broad support to farmers.
2	Entrepreneurial farmers	Poor access to credit and other financial services Inadequate access to professional agribusiness development services	Farmers lack the capacity to access available funding due to perceived riskiness of the sector and poor deal packaging.	Inadequate capital, low revenue generation due to resource constraints, inability to finance a larger scale of production.	Capital raising requests need to be packaged by trained agribusiness service providers trained by professionals.
3	Aggregators, Processors	Poor access to credit and other financial services Inadequate access to professional agribusiness development services	Lack of a proper managerial structure, informal business operations, failure to fulfill lending criteria, inadequate deal packaging.	Inadequate capital, inability to scale backward or forward in the value chain, low revenue generation due to resource constraints	Investment in trained professionals; businesses need to run on proper structure.

Low literacy on financial management and services was observed to hinder access to finance by actors at all levels of the value chain. Therefore, improving knowledge of actors on the where, when, and how to access financial products and services is a priority. Going forward, communication tools will be employed to amplify messages on financial literacy in targeted program locations using digitized extension tools.

2.4 Enhancing Sector Coordination and Business-to-Business Linkages

Overview of Strategy

In the inception phase, KIT, Wageningen Center for Development Innovation (WCIDI; a unit of WUR), and IFDC developed a Business-to-Business (B2B) Strategy (see Annex VII for the detailed strategy). The strategy consists of a conceptual understanding of B2B linkages and partnerships, a process, and related activities. It provides a blueprint on how HortiNigeria will achieve its result of identifying 200 B2B opportunities and brokering 100 B2B partnerships.

The purpose of the B2B sub-component within the program context is twofold:

- Facilitate the supply of horticultural products and services throughout the sector (horticulture value chain). This implies stronger ties between farmers and offtakers, resulting in higher economic efficiency and lower transaction costs; matching supply and demand, and satisfying the local demand.
- Promote horticulture production by facilitating access to quality inputs and disseminating horticulture innovations. B2B linkages could be considered within the framework of developing or expanding rural distribution networks that will ensure the reach of such inputs to the doorsteps of smallholder farmers.

During the inception phase, 21 opportunities were identified and five B2B partnerships were brokered. Strategic activity areas to be implemented through the program are:

- Identifying B2B opportunities.
- Facilitating the establishment of B2B linkages.
- Brokering B2B partnerships.

During the inception phase, the B2B team conducted consultation interviews with program actors and stakeholders, organized meetings, and carried out desk studies to assess existing B2B linkages and potential partnerships through the various program components. In addition, the B2B team has collected examples of existing B2B linkages and partnerships in the northern and southern states related to the HortiNigeria Components 1, 2, and 3. As the components have different objectives, actors, and types of activities, the B2B opportunities, linkages, and partnerships will be different. This ongoing process was followed by the creation of a B2B Excel database, documenting and analyzing the existing linkages and partnerships. Identified opportunities through the various components resulted in the identification of B2B opportunities areas (Table 9).

Table 9. Potential Business-to-Business Opportunities and Partnerships within Components 1, 2, and 3

	Key Actor	Explanation of the linkages/partnership and contribution to horticulture sector
Component 1	East-West Seed	<ul style="list-style-type: none"> • Linkages with farmers interested in becoming agro-dealers that retail East-West Seed products. • Formalization of partnerships with farmers to become agro-dealers and official seed retailers.
	ABCs	<ul style="list-style-type: none"> • Internal linkages and partnerships among lead farmers, aggregators, and input suppliers to strengthen cooperation within ABCs. • External linkages/partnerships with offtakers of regional and domestic food markets.^a • External linkages/partnerships with larger agri-food processing industries to supply in bulk.
Component 2	Innovation suppliers	<ul style="list-style-type: none"> • Emerging linkages and partnerships with entrepreneurial farmers transferring technology.
	High quality input and service providers	<ul style="list-style-type: none"> • Linkages/partnerships with entrepreneurial farmers requiring (specialized) high-quality input matching the technology. • Linkages between farmers and the Fertilizer Producers and Suppliers Association of Nigeria (FEPSAN).
	Professional aggregators and market offtakers	<ul style="list-style-type: none"> • Linkages with entrepreneurial farmers for bringing new products and higher production volumes to the domestic and Lagos market. • Linkages/partnerships with larger food and agro-processing industries to supply in bulk.
	Entrepreneurial farmers	<ul style="list-style-type: none"> • Linkages among innovative entrepreneurial farmers to promote joint learning activities and purchase technology.
Component 3	Business and investment plans to access finance	<ul style="list-style-type: none"> • Ideas for B2B linkages and partnerships as part of the business and investment plans. • Finding B2B linkages partners, facilitating matchmaking, and providing templates for formalization.

a. 60-70% of vegetables go through the Lagos market. EKN suggested focusing on offtake within Nigeria for nutrition and food security.

A key component in the B2B promotion is documenting these emerging opportunities, linkages, and partnerships in the B2B Excel database. Hence, the B2B team will systematically record linkages and partnering details and processes and how the HortiNigeria program components brought them together or contributed in any way. The Component Leads, program team members, ABC coaches will document the linkages and partnerships that they come across in their program component as part of their regular activities. KIT has started to support the program staff and actors to document linkages and partnerships. During the ICRA ABC training (June 8-10, 2022), the KIT team facilitated one B2B session and explained the B2B strategy to the ABC coaches and explained how to record identified opportunities, linkages, and partnerships.

Implementation Progress under Component 4 during the Inception Phase

Throughout the inception phase, activities conducted under this component have cut across the value chain as alliances have been formed with various actors from smallholder farmers to professionals in both public and private sector within the horticulture sector.

Scoping Meetings with Value Chain Actors: Several activities were carried out to identify, assess, and facilitate stronger alliances with relevant actors to address multiple taxation and policy changes within the value chain. These are preliminary actions spurring improvement in sector coordination and promoting B2B collaboration. They include:

- **Boosting Agricultural Gains and Services (BAGS):** HortiNigeria enrolled as a member of this platform in the first week of the inception phase. BAGS is a Kaduna agricultural platform that aims to work with development partners and private sector to improve the state's sector coordination. The platform focuses on the value chains of rice, maize, soybean, cowpea, ginger, tomato, dairy. HortiNigeria participated in three consultative meetings, reviewing, and developing joint work plans to foster specific implemented activities.

Activity areas covered under this collaboration involved identification of actors across different value chains within the target locations, prioritizing women in Kaduna and Kano, and discussion of strategies to facilitate improved access to input and output markets, fostering increased productivity of tomato. Linkages and partnerships among lead farmers, aggregators, and input suppliers, strengthening of cooperation within ABCs, and external linkages/partnerships with off-takers of regional and domestic food markets and larger agri-food processing industries to supply in bulk are opportunities identified under this collaboration in the inception phase.

- **Nigeria Agribusiness Group (NABG):** NABG was created to increase private sector participation and leadership in emerging agriculture value chains in Nigeria. HortiNigeria and NABG have a mutual interest to facilitate and positively influence the agribusiness policy and regulatory environment by facilitating collaboration and synergy among public and private stakeholders. Therefore, a Memorandum of Understanding (MOU) with the association was initiated in the inception phase. The agreement is committed to engaging the private sector to coordinate regulatory and policy reforms in the country and work with the government to remove major constraints inherent in the Nigerian agriculture and agribusiness industry.

NABG and HortiNigeria will work together to address existing policy issues in the horticulture sector:

- The ban of importation of soluble fertilizer and other imported micronutrients: The government's blanket ban on NPK fertilizer blends has also hampered the importation of crop-specific fertilizers (enhanced effective or soluble fertilizers) that are not produced in the country.
- The New Tomato policy: This policy regulates the importation of tomato concentrate; however, there are some implications on the tomato industry:
 - Reduction of the tariff on tomato concentrate not put up for retail sale: Triple concentrate and others will negate CBN policy on 43 imported goods and services not valid for foreign exchange, which was aimed at encouraging backward integration.
 - The amended fiscal policy is silent on a levy of U.S. \$1,500/mt to be paid on the importation of triple concentrate. Its exclusion in the previous tomato policy will affect the funding of the tomato levy TSA account and, by extension, activities of the tomato industry.
 - The amended fiscal policy is silent on import restriction of tomato concentrate through seaports **ONLY**. Its removal will encourage abuse of the Economic Community of West African States (ECOWAS) Trade Liberalization Scheme (ETLS) and smuggling of tomato concentrates into Nigeria, thus negating the backward integration program of the Government of Nigeria.

Furthermore, in collaboration with NABG and other stakeholders, HortiNigeria intends to initiate a dialogue with the Federal Ministry of Agriculture and Rural Development (FMARD) to reduce informal road taxes, using policy advocacy to influence positive change.

- **OCP:** Several meetings have been held with OCP, and the program is in the process of establishing an MOU to define the role of the Moroccan fertilizer company. Key areas of alliance include:
 - Validating vegetable fertilizers produced by OCP.
 - Collaborating with FEPSAN members, including Golden Fertilizer on the production of soluble fertilizers for greenhouses and Dangote Fertilizers to produce additional blends
 - Enabling the distribution network to improve farmers' access to quality fertilizers.
- **Tomato Jos and Dangote Farm (Dangote Tomato Plant, Kano):** During the inception phase, these companies were identified as two of the largest off-takers of tomatoes in Nigeria. HortiNigeria aims to work with both companies to facilitate linkages for smallholder farmers in Kaduna and Kano states. The companies' locations, in both Kaduna and Kano, play a critical role in reducing losses (especially in February through April, when there is a glut) often resulting from the logistics of transporting tomatoes to southern markets.
- **Organic Fertilizer Producers and Suppliers Association of Nigeria (OFPSAN):** This partnership aims to introduce and increase the use of organic fertilizer by both smallholder and entrepreneurial farmers in the four target states. In April, field trials were established on a learning demonstration site at the Institute for Agricultural Research (IAR)/Ahmadu Bello University (ABU), Zaria, Kaduna State, to assess the efficacy of organic fertilizers on vegetable production.
- **National Tomato Growers, Processors and Marketers Association of Nigeria (NATPAN):** In March, an interview was conducted with the association's secretary to understand the tomato value chain in Nigeria. Through the various meetings held with NATPAN, bottlenecks were identified. These bottlenecks included a lack of farmer adoption of plastic crates for storage, poor or weak government regulations on importation of tomato concentrate, high tariff, and monopoly of the market. Efforts to design tailor-made and gender-sensitive solutions to address these bottlenecks are underway.

Business-to-Business Linkage: During the inception phase, the two main activities facilitated B2B linkages. HortiNigeria's visit to Mile 12 International Market and vegetable sourcing mission, implemented in collaboration with S4C, launched linkages between actors within the horticulture value chain (farmers and market off-takers) as well as between service providers, such as financial institutions. A typical example is the identification and linkages that metamorphosed between Bunkasa AgriTech, a subsidiary of the Mile 12 International Market identified during the team's visit to the international market, and linkages with smallholder farmers in Kano state during the vegetable sourcing mission. Furthermore, linkages between Bunkasa AgriTech and a financial institution occurred, as initial discussions for potential deal financing were done with JAIZ, Zenith, Taj, Sterling, Polaris, and Wema Banks to facilitate access to credit for Bunkasa AgriTech. The operating lease asset will finance the purchase of 20,000 recyclable plastic crates and secure a warehouse facility for Bunkasa AgriTech Ltd, Mile 12 market, Lagos, improving agrologistics within the value chain. HortiNigeria is facilitating discussions to consolidate agreements with the various actors.



Figure 10. Exhibition Stand for Farmers at a Vegetable Sourcing Mission in Kano

Enhancing Sector Coordination: In the inception phase, a significant milestone was the implementation of a consultative review meeting with various stakeholders and agricultural experts, held in Kano State. The meeting was an opportunity to reactivate an existing platform that will continue to coordinate a national strategy for a response mechanism for pest and disease outbreaks, especially *Tuta absoluta*. Key institutions present included FMARD, NIHORT, Kaduna and Kano state Agriculture Development Programs (ADPs), and a representative of NATPAN.

The next steps involve organizing key members of the platform or committee – FMARD, NIHORT, ADPs of Kano and Kaduna states, NATPAN, NABG, and CropLife – with the HortiNigeria team facilitating their meetings.

The hierarchy of the team should be as follows:

- Permanent Secretary of FMARD as the chairman of the response team.
- NIHORT as the Secretary of the team, under the leadership of the national program leader on *Tuta*.
- HortiNigeria as the facilitator.

Learning

Table 10 highlights the lessons learned under Component 4 during the inception phase. These lessons are identified and discussed under problems, issues, impact, and recommendations. The problem states a generic challenge encountered during the inception phase, the issues are the external dynamics exacerbating the preexisting problems, the effects are the direct consequence on program implementation, while recommendations highlights ways the program can address the problems.



Figure 11. Participants in the Consultative Policy Review Meeting in Kano State

Table 10. Learnings Gathered under Component 4 during the Inception Phase

	Category	Problem	Issue	Effect	Recommendation
1	Logistics	High rental cost of crates	Despite the benefits seen in using crates to transport crops such as tomatoes from the farm gate in the north to the market in the south, the adoption level of crates has been low among farmers. This slow adoption has been observed to be because of the high rental cost of the crates and a poor transportation/logistics system to ensure delivery and return of the crates. Additionally, the length of time involved in transporting the crates has been observed to delay subsequent batches of supply.	Low adoption of best practices Revenue loss Food wastage	HortiNigeria will work with the relevant stakeholders, e.g., Nigeria Institute of Transport Technology (NITT) and Nigeria Sovereign Investment Fund (NSIA) and kobolt360&Alex to encourage return of the plastic crates using the railway transport system. There are indications that new rail coaches have been imported for vegetables; this will be explored by the program to facilitate usage.
2	Adoption	Unavailability of hybrid seeds	Despite various interventions led by the Dutch-funded S4C program, during the sourcing mission collaboratively held with HortiNigeria, farmers were found to still be making use of farmer-saved seeds. Farmers explained this to be because of the unavailability of hybrid seeds in the market.	Low adoption of hybrid seeds	HortiNigeria will continue to work with relevant stakeholders to create awareness and encourage the adoption of quality/hybrid seeds.
3	Dysfunctional associations		During the scoping of potential partners, some associations, such as AFGEAN, were not functional or nonexistent. This has limited the partnership with existing associations to only NABG during the inception phase.		HortiNigeria will explore the partnership with NABG to reach out to AFGEAN.

Implications of the learnings from implementation of Component 4 during the inception phase are scattered throughout the different nodes of the value chain, from its effect on the increased cost of production resulting from the adoption of new technologies such as crates by farmers to the inability of actors to drive effective policy advocacy because of dysfunctional associations and platforms. Drawing from the learnings gained, HortiNigeria intends to work to revive existing platforms and facilitate the creation of platforms, where necessary. This is expected to give a voice to actors to drive policies that will effect change and facilitate more Business-to-Business linkages.

2.5 Youth and Gender Empowerment

Implications from the Learnings Gained during the Implementation Period

The role of women and young people (18-35 years old) in the horticulture sector is critical to contributing to food and nutrition security in Nigeria, though barriers remain for them to be more proactively involved. During the inception phase, a Youth and Gender Empowerment Strategy (YGES) was developed, which includes a theory of change (see Figure 12) specifically for women and youth. The aim of this strategy is to ensure that engaging young people and women both remain embedded across all four components while also being an area of focus in and of itself, so as to better understand how challenges idiosyncratic to them can better be addressed. The ambition of the strategy is intentionally set high, with an aim to not only reach but also empower as many women and youth as possible, though recognizing that this will not be achieved for all of those involved.

The contexts of the two northern and two southern states are quite different in terms of cultural norms and attitudes toward women, access to markets, and availability of resources and support through the operating environment. This is reflected in the approaches in each of the components and also in the YGES. While in the northern states, emphasis is being placed on training, support in organizing and aggregation with individual farmers, in the southern states, interventions are working to scale up already existing SMEs. Nevertheless, through the YGES, HortiNigeria intends to foster an enabling environment that supports young people and women who want to grow from an individual smallholder into a robust SME – in both in the northern and southern states. This is reflected especially in the ToC which shows activities and outcomes separately for the northern and southern states, but with impact at an overall collective level.

The YGES was developed through an online and in-country workshop with component leads and partners, site visits and interviews with stakeholders and actors in the southern states, and desk-based research. Beyond the ToC more detailed explanations are provided of how each component will deliver on their respective targets. The way of working section explains how the in-country and remote staff will work together to deliver the activities on the ground and adjust these based on discussions and reflections on whether and how these activities are translating into the outcomes and impact statements shown in the top half of the theory of change. How the in-country and remote support staff interact will be agreed in more detail as the inception phase ends and the programs goes into full implementation.

See **Annex IV** for the full YGES strategy.

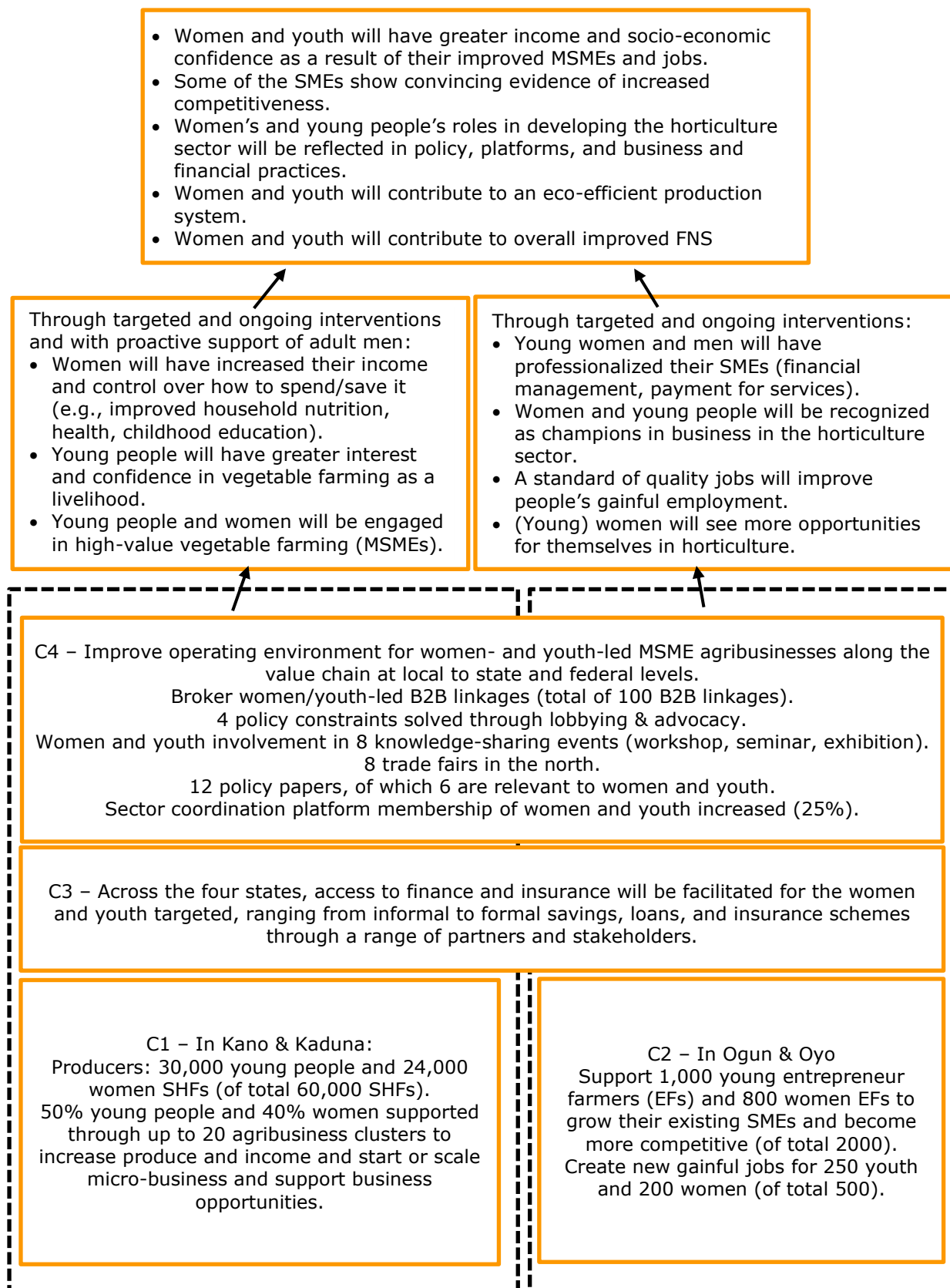


Figure 12. HortiNigeria Theory of Change for Youth and Gender Empowerment

3 Monitoring, Evaluation and Learning

This chapter discusses the activities that were conducted during the inception phase under Monitoring, Evaluation and Learning. These consist of:

1. Development of Work Plan.
2. Development of result chain and result framework.
3. Review of component strategies
4. Development of Monitoring, Evaluation and Learning (MEL) Strategies (all MEL strategies are found in **Annex III**)
5. Implementation of baseline.
6. Processing, analyzing, validation, and reporting.

3.1 Workplan

The program workplan workshop, held from December 1-3, 2021, comprised IFDC and EWS-KT. At the workshop, the program document was used as a guide for the development of the program's workplan. The Component Leads observed the synergies existing among the components and the need to work together to achieve a common goal. The output from the workplan session comprised programmed activities, milestones/targets, implementation dates, and activity lead persons. See **Annex VIII** for the program workplan.

3.2 Results Framework

The program theory of change (ToC) is built on two main assumptions:

- i The program can scale up existing innovations with a high return on investment.
- ii The program can build on existing networks, partnerships, and programs to bring about inclusive and sustained transformation in the horticulture sector, leading to the sustainable contribution to activities when the program ends. Thus, the program exit strategy is built in from the beginning.

With the above, the program's logical framework serves as a microscopic lens that zooms in on a specific pathway within the program ToC. Thus, the program is being implemented with consideration for maximizing the synergies existing among all the components.

The program will introduce many technical strategies along the value chain (and within each component) and push through some emerging unfavorable external conditions towards achieving the set targets.

The "theory of change" portrayed in HortiNigeria program will lead to significant achievement of the program goals. The program has started working towards increasing productivity and raising income of smallholder vegetable farmers (in Kaduna and Kano) through various forms of capacity building (training of farmers on good agricultural practices, training of agro-input dealers, training of coaches on agribusiness clusters), scoping on identifying local agribusiness actors within the clusters which led to the discovery that only few females participate in the post production input and output services, (most of the females participate more in processing), while minimizing negative environment impact. Some of the negative environment impacts include shortage of water due to current renovation of the irrigations scheme. The effect of the Covid-19 lockdown, current Russia-Ukraine war, the high level of insecurity, banditry and kidnapping, and persistent increase in fuel prices have hitherto led to different economic crises, most especially causing alarming increase in the prices of agro-inputs (seeds, chemicals, and fertilizers), cost of fueling irrigation pumping machine, transportation, and labor costs. On the other hand, the program also aims to grow overall production volumes and incomes of farmers and reduce the risk of seasonality by piloting innovative production systems among entrepreneurial farmers (in Ogun and Oyo) while leveraging on technologies that mitigates against specific production challenges and at the same time maintaining affordability by using locally adapted solutions. A scoping study was carried out to identify the major stakeholders in horticulture in the region, the existing technologies, technology needs and in-depth understanding of the horticulture sector in the region. The findings from the scoping were substantiated through a participatory validation exercise, KIIs, and FGDs. Technology innovations were identified for pilot and prospective partners and service providers were identified and are being screened. Horticulture production in Oyo and Ogun states is mainly driven by the presence of Nigeria's largest market: Lagos, but still limited in production in many respects due to lack of facilities, land availability, fluctuating markets, lack of some technical trainings, access to finance and ban on the importation of greenhouse dependent inputs.

Understandably, the program is aware of some bottlenecks that may act unfavorably toward attaining these stated goals. The program has started working towards inclusive finance by formulating a mechanism within the circumstances of stakeholders in the regeneration of the economy since the primary goal for inclusive finance is poverty alleviation through economic inclusion. The program's inclusive finance and private sector development component targets to facilitate company expansion through access to financial services by mobilizing sustainable inflow of commercial capital to the horticulture sector through financial institutions over the long term, especially for women and youth owned businesses. The overall aim is to promote private sector investments along the value chains through some win-win financial options favorable to all parties. The program has started to formulate strategies that overcome barriers to accessing finance through the following objectives:

- i Increasing the bankability and credit worthiness of SMEs by building trust among value chain players in the agribusiness clusters being developed by Component 1.
- ii Changing the negative mindsets and mitigate risk to strengthen appetite of commercial financial institutions towards horticulture sector lending.
- iii Building managerial and financial investment skills of MSMEs, to boost investors' confidence
- iv Ensuring women and youth inclusion in access to financial services.

To achieve these interventions, the program seeks to influence both the demand side (beneficiary MSMEs) and supply side of financial services to create some marketable tractions.

The program will also be brokering business-to-business partnerships. The program has started creating linkages for sourcing/offtake markets for vegetables from Kano, including partners at Mile 12 market and Lagos State and processors such as Dangote Farms and Tomato Jos and is creating agribusiness clusters that will sustain this business model of market linkages. The platform on *Tuta absoluta* will be reactivated to stay alert as part of a national strategy for a response mechanism for the control of pests and diseases for vegetables, working with key stakeholders (FMARD, NIHORT, NATPAN, NABG, CropLife, State ADPs). The program is also working with Kaduna State government on BAGS (Boosting Agricultural Gains and Services) in seven value chains, including tomatoes.

Policy advocacy to improve the enabling environment for horticulture value chain will be diligently pursued. The program is promoting the use and adoption of organic fertilizer in vegetable production, facilitating the adoption of the new Tomato policy, policy lobbying to allow import of crop-specific fertilizers for vegetables (soluble fertilizer) or local production to balance vegetable production/supply between the north and south. Also working towards reducing multiple taxes in the course of transporting vegetables to markets.

See **Annex VII** for the program's result framework.

3.3 Monitoring, Evaluation, and Learning Users And Principle

The monitoring system for HortiNigeria aims to show how impact will be achieved and measured and how it can be attributed to the program activities under each component. HortiNigeria monitoring and evaluation (M&E) starts from the very beginning, when constraints are being studied and intervention ideas are being developed. After component activities have begun, monitoring will become a more rigorous and regular occurrence. The sequence of monitoring and evaluation activities, as designed within the workings of HortiNigeria and the documents to be produced and store information, are as shown in the monitoring plan in **Annex III**.

Monitoring of component activities is a crucial aspect of the program since it is the component activities that contribute toward the impact for the different actor groups. The system for component activities monitoring is based on a causal model or logic that has been developed for each component and also to monitor the interrelations ships between the components. The system is designed to ensure that data are used to generate reports and are used by staff to improve impacts. Therefore, monitoring and reporting on components is not a function carried out solely by the MEL team, but it is designed to be done by the program teams as a whole. Another element is to gather information on whether certain business models/initiatives/innovations are scalable.

The MEL team duties include the following:

- Support Component Leads in proper Monitoring and Evaluation, acting as the quality control center for the M&E system.
- Help sift through information to identify what is important for making management decisions about a component.

- Support the components in gathering data, meeting with partners, and examining activities, when necessary.
- Provide quantitative data to measure observable changes and qualitative information to deepen understanding of the processes of change.

Decisionmaking on components is done based on a quarterly review of each component. Every week, HortiNigeria staff reviews progress on each component; while decisions are often made at other times, this review provides an opportunity to:

- Formally review progress in the component based on information from the M&E system.
- Summarize decisions made in the last three months.
- Plan the next steps of implementation.

3.4 Development of Monitoring, Evaluation and Learning Strategies

The Monitoring, Evaluation and Learning strategy was designed to cover three main aspects:

- i Monitoring of program implementation in progress and horticulture sector performance. Specifically, the monitoring of output and immediate-outcomes indicators at the level of program partners and private stakeholders, based on available data to populate quarterly program progress report (IATI) and program dashboard.
- ii Evaluation of program impact at the farm household level (Kaduna and Kano states). Specifically, baseline and endline evaluation of intermediate outcomes and impact indicators through a field survey of 2,000 actors in each evaluation.
- iii Learning and communication for adaptive program management. The learning workshops with 100 (lead) farmers, program partners, and private stakeholders will take place in mid-2023 and mid-2024.

3.5 Baseline Survey

The baseline survey could not take place as scheduled because it coincided with the Ramadan fasting, an important event in the areas to be surveyed. The exercise thus started on April 26 and ended on June 2, 2022. Before the start of the baseline survey, Terms of Reference (ToR) were sent out to recruit a consulting firm to carry out the baseline survey of a total of 2,000 farm households involved in horticulture production in both Kaduna and Kano states.

Eight consulting firms applied for the job of conducting the baseline survey. A six-member panel screened the firms based on the ToR. Five were eliminated because they could not satisfy most of the conditions of the ToR. The three that were interviewed satisfied most of the conditions in the ToR. They were interviewed based on the criteria stated below:

1. Past experiences related to the proposed baseline survey.
2. Ability to mobilize enumerators suitable for the job within the available time range.
3. Ability to ensure a high degree of data quality control/assurance.
4. Ability to put in place adequate security measures for the enumerators who will be collecting data in the field.

From the interview session, Qualiquant Services Limited showed a high degree of ability in meeting the criteria listed above. Qualiquant Services was therefore selected for the job.

A total of 1,000 farm households (500 farm households were sample for each case of treatment and non-treatment local government areas) for each of the states. The treatment local government areas in Kaduna and Kano states where the baseline survey was done is shown in Table 11. A detailed report on the program baseline survey will be submitted separately.

Table 11. Treatment Local Government Areas in Kaduna and Kano state for Baseline Survey

Kaduna		Kano	
Treatment	Control	Treatment	Control
Zaria	Lere	Garko	Danbatta
Sabon Gari	Jaba	Minjibir	Gaya
Makarfi	Kauru	Dawakin Tofa	Gezewa
Kudan	Kaduna North	Dawakin Kudu	Madobi
Kubau	Kaduna South	Kumbotso	Sumaila
Soba		Rimin Gado	

4 Administration and Logistics

This chapter highlights administrative and logistics arrangements completed during the inception phase. These include staffing, office accommodation, training materials and manuals developed, communication tools and channels used. The program also gives insights to the program planning and implementation in the inception phase.

4.1 Staffing

The consortium completed the hiring of key staff needed to ensure success in the program implementation. This enabled the team to begin program implementation immediately. Onboarding of staff occurred on 2nd November 2021. The onboarding helped the program team to adequately review the program documents and become conversant with the program expectations, their roles, and responsibilities.

There were two offer declines under Component 2&4 and a change in personnel from EWS-KT. Replacement for the declined offers was made in the second week of November. Details of the changes that occurred in the staffing are as follows:

Component 1: Two changes were made under this component involving, Mrs. **Ruth Saleh Ardzard** who was originally designated to lead the component was replaced with Mr. **David Godfrey Alechenu**, however, Mrs Adzard still provides support (50% of her time).

Secondly, Mr. **Abdullahi Umar** who was designated as the Agribusiness Coordinator to support Component 1 was reassigned to lead component 4, While Mr. **Danjuma Makama** was recruited to handle the Agribusiness coordination position.

Component 2: Mr. **Olabisi Ilebani** was hired to replace the offer declined in component 2.

All the above changes were effected with approval from EKN.

Figure 13 shows the new HortiNigeria organogram, depicting the key staff.

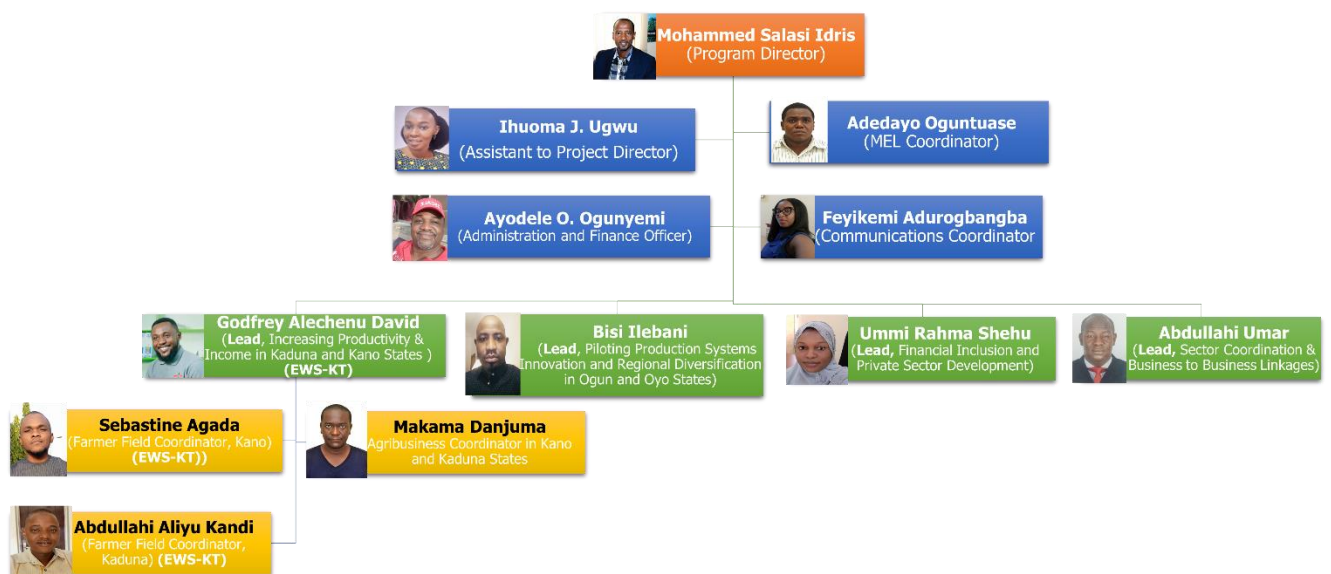


Figure 13. Organogram of HortiNigeria Key Staff Based in Nigeria

HortiNigeria team (Netherlands inclusive) is uniquely made up of a diverse team of experienced and dedicated Nigerian professionals from different cultures, tribes, ages, and gender. There are 40 team members across the consortium, as shown in Table 12.

Table 12. HortiNigeria Consortium Partners and Staff Strength

S/N	Institution	Staff Strength	Lead Roles
1	IFDC	12	Prime Partner leading Components 2, 3 and 4
2	EWS-KT	16	Leading Component 1
3	WUR/KIT	12	Leading Monitoring, Evaluation and Learning (MEL) and Youth and Gender (Y&G) through the Empowerment Team

*This reflects local full-time positions. EWS-KT also has significant inputs from its international team (contribution); this covers management support, technical support, data management, and financial support with financial management.

4.2 Office Accommodation

HortiNigeria was able to quickly complete its office acquisition and setup in Kano and Ibadan to oversee the program activities in the north and south regions respectively. The setup for Abuja office was also completed. The office in Abuja is the coordination office for the four program locations. EWS-KT leverages an existing office in Zaria to manage HortiNigeria component 1 activities. The existing office ensures synergy with Sustainable Development Goal Program and Ahmadu Bello University. EWS-KT also set up an additional office in Kano to enable proximity to IFDC.

4.3 Management and Coordination

HortiNigeria is leveraging meetings conducted at the program management level, consortium management level, and supervisory board level to facilitate the strategic direction, coordination, and tracking of implementation progress.

Program Management Meeting: During the inception phase, more than 30 weekly meetings were conducted at the program management level. The team comprises the HortiNigeria Program Director, the four Component Leads, the Monitoring, Evaluation and Learning Specialist, the Communications Coordinator and the Administration and Finance Coordinator. The meetings focused on reporting activities conducted, challenges experienced, and next steps. Information enlightening team members on horticulture market trends and agricultural/horticulture policy reviews have been shared.

The meeting helped with program planning and monitoring of the program’s progress.

Consortium Management Team Meeting: This meeting was held monthly, and members of the team include the HortiNigeria Program Director and EWS-KT and WUR representatives. However, several impromptu meetings were organized to address challenges in the field, such as insecurity, issues with baseline data collection, and farmer profiling. The first meeting was held virtually on May 11, 2022, with discussions on the signing of sub-agreements among consortium members, operational issues (payment to consortium members, staffing, office accommodations), and technical matters (Workplan, baseline survey, MEL).

Supervisory Board Meeting: The supervisory board meeting has not yet been held; it is scheduled for July/August 2022.

4.4 Communication Activities

HortiNigeria recognizes that internal communication and the related program activities generate information that bears relevance to an external audience.

To ensure that internal communication is done right, efforts were geared toward building a good information flow between partners through report sharing and regular meetings. In generating

information for an external audience, results from the program’s Monitoring, Evaluation and Learning will be disseminated using appropriate communication channels and tools.

A communication strategy, covering both internal and external communications, was developed and validated during the inception phase. It contains strategies and guidelines required to communicate effectively and efficiently within and through the consortium. Other communication channels and tools that were developed and set up include the following:

Logo: The major factor that was focused on when designing the HortiNigeria logo was the colors. Orange and green have been major colors of the Netherlands and Nigeria, respectively. The second concept was the use of crop illustrations (tomato and chili pepper) to show the value chains the program is working on.

On documents, all consortium partners will use the appropriate logo positioning on the cover page but can use their own logo on subsequent pages.

Tagline: The tagline of the program was created from the goal of the program. With the tagline, the program portrays its goal everywhere to stakeholders. The tagline is positioned directly below the logo.

Social media: Two social media platforms were created in February 2022 to strategically create awareness about the program. These social media handles are:

- Facebook: <https://web.facebook.com/HortiNigeria>
- Instagram: www.instagram.com/hortinigeria_program.

Also, HortiNigeria leverages existing social media platforms of consortium partners, such as the EWS-KT Facebook page: https://web.facebook.com/groups/ktnigeria/?_rdc=1&_rd

Website: HortiNigeria program activities are being hosted on IFDC’s existing website. Logos of the consortium partners are placed on the program’s page. <https://ifdc.org/programs/hortinigeria/>

4.4.1 Program Launch

The program was launched on Thursday, March 3, 2022, at the Transcorp Hilton in Abuja, Nigeria. The launch was used to increase the awareness of stakeholders about the HortiNigeria program and to provide a forum for networking and sharing of ideas. The program was a hybrid event (i.e., physical and virtual presence) that hosted a total of 436 participants, 232 participants online (Facebook and Zoom) and 204 in-person participants.

Dignitaries present at the event included the Honourable Minister of Agriculture and Rural Development, Representatives of Governors from the program’s intervention states (Kaduna, Kano, Ogun, and Oyo),

Representative of the European Union Ambassador to Nigeria and Economic Community of West African States (ECOWAS), the Ambassador of the Kingdom of the Netherlands to Nigeria, Nigerian Ambassador to the Netherlands (virtually), IFDC President/CEO, IFDC Regional Director of North and West Africa, the Global Director of EWS-KT Transfer, Chairman House of Representatives Committee on Agriculture, the Managing Director Kaduna Investment Promotion Agency.



Figure 14. Dignitaries at the HortiNigeria Launch, Abuja, Nigeria

4.4.2 Potential Partners and Collaborators

Following the program launch, HortiNigeria has identified several potential partners³ and collaborators⁴ across the program components. Table 13 lists potential partners (MOUs/agreements are underway) and Table 14 lists potential collaborators the program has identified and is working with.

Table 13. HortiNigeria Potential Partners

S/N	Potential Partners
1	Tomato Jos
2	International Center for development oriented Research in Agriculture (ICRA)
3	Dangote Fertilizer
4	Dangote Farm Tomato Processing
5	OCP
6	Halal Microfinance Bank
7	Organic Fertilizer Producers and Suppliers Association of Nigeria (OFPSAN)
8	Netherlands-African Business Council (NABC)
9	Nigeria Agribusiness Group (NABG)
10	Wema Bank
11	Taj Bank
12	Federal Ministry of Agriculture and Rural Development (FMARD)
13	Dizengoff
14	Yadilan Investment
15	Jaiz Bank
16	Zenith Bank
17	Golden Fertilizer (Flour Mills)
18	Fertilizer Producers and Suppliers Association of Nigeria (FEPSAN)
19	Ignitia
20	Farm Radio International (FRI)

³ A partner is an institution with which the program has a signed agreement.

⁴ A collaborator is an institution the program works with to leverage its strength, but there is no signed agreement.

Table 14. HortiNigeria Potential Collaborators

S/N	Potential Collaborators
1	National Horticultural Research Institute (NIHORT)
2	Central Bank of Nigeria (CBN)
3	Boosting Agricultural Gains and Services Platform (BAGS)
4	National Tomato Growers, Processors and Marketers Association of Nigeria (NATPAN)
5	Federal University of Agriculture, Abeokuta
6	Arewa FM
7	Sa'adatu Rimi College of Education, Kano
8	Ahmadu Bello University, Zaria
9	National Agricultural Extension and Research Liaison Services (NAERLS)
10	Nigeria Sovereign Investment Authority (NSIA)
11	South West Agricultural Company (SWAGCO)
12	Nigeria Institute of Transport Technology (NITT)