Land O’Lakes Venture37 leads the implementation of the CAT through a consortium of four leading agricultural development and academic institutions with funding from Foundation for a Smoke-Free World through Agricultural Transformation Initiative (ATI):
Dear Reader,

Welcome to our last quarterly newsletter for 2022. We thank you for supporting us and being part of our journey this far. Now that the year has come to an end, it’s time, therefore, to take stock of ourselves and progress made so far. To highlight a few impactful areas, we take a look at the CAT program impact survey that we conducted for the 2021-2022 period and notice that overall average yield of CAT supported crops has increased by 36%, while 80% of the farmers say they have produced a crop using a new variety or have used an innovation after working with CAT supported business grantees. Additionally, income for farmers from CAT supported crops has increased by 165% with 78% of these farmers showing that they have experienced change. In terms of income from all agricultural sources after our interventions, we have also seen a 125% jump, accounting for 66% of farmers who experienced change. These are great strides which speak to our core mission and goal. We haven’t done this on our own. In fact, we can’t afford to go solo. All this progress has been made possible through the partnerships we have with several stakeholders, including the Government of Malawi with support from our funding partner – the Foundation for a Smoke-Free World’s Agricultural Transformation Initiative (ATI).

Being the last newsletter of the year, it is important to also celebrate a few notable areas that deserve special mention. First is the involvement of the private sector: During the year, we saw an extraordinary interest from the private sector in supporting our targeted smallholder farmers with financial capital. For example, towards the end of the year, we hosted a fruitful meeting with captains of financial and banking sector to look at ways of how we can collaborate to financially support the farmer better. Secondly, at the highest level of political leadership, President Lazarus Chakwera visited the CAT Smart Farm at LUANAR – Bunda Campus to appreciate our interventions in the agriculture sector, a gesture which demonstrated his government’s unmatched commitment to the agricultural transformation agenda. Lastly, but no least in importance, several stakeholders such as the Food and Agriculture Organization of the United Nations (FAO) visited our Smart Farms to explore areas of collaboration and appreciate various technologies and innovations being showcased there. We hope to do more and better this year by leveraging on some of these achievements.

Finally, we thank our implementing partners for the good collaboration shown during the past year and we look forward to their continued and strong collaboration in 2023. We also the financial support we receive from the Foundation for a Smoke-Free World’s Agricultural Transformation Initiative (ATI).

Wishing you a happy and prosperous new year!

Macleod Nkhoma
EXECUTIVE DIRECTOR
The Centre for Agricultural Transformation (CAT) organized a three-day business clinic for 35 agricultural enterprises and start-ups drawn from its Business Incubation and Commercialization program and Entrepreneurship Academy at Malawi University of Science and Technology (MUST). The workshop took place from 6th – 8th December 2022 at Ufulu Gardens Hotel in Lilongwe. Opening the workshop on 6th December, CAT Executive Director Macleod Nkoma called upon participants to come up with innovative solutions aimed at addressing challenges smallholder farmers encounter in the country. “We need to hold hands and work to make a difference in the life of a farmer. There is a lot of work out there to help our smallholder farmers who are facing so many challenges. Helping farmers to diversify their value chains, adopt new technologies and commercialize new innovations will be key in addressing some, if not all, these farmer challenges,” he said. The workshop aimed to empower participants with necessary knowledge and skills for scaling up their operations in alternative value chains, and enhancing access to external opportunities for formal financing, investment and strategic partnerships. Participants were trained on topics such as Business Plan Development, Competitive Business Pitching, Business Financing, and Investment Deal Structuring.

Rizvaan Khan - Agriculture and Economic Programs Manager at the Agricultural Transformation Initiative - said the workshop was significant because it would help entrepreneurs on how to navigate the challenging business landscape in Malawi by developing effective business plans. One of the participants, Madalitso Chipewa - Executive Director of ACADES Microfinance – described the workshop as timely, arguing it would help strengthen her organization’s business strategy to make profits and better reach out to young smallholder farmers with loans. “It is important for a business to have a growth strategy and a clear model and this workshop will help us gain knowledge on how to move forward in business,” said Chipewa. At the end of the workshop, participants received Certificates of Participation during a glamorous evening event at the pool-side of the hotel.
One of the challenges smallholder farmers face is access to formal financial capital through commercial banks. To ensure that financial institutions appreciate the production cycle and profitability of value chains, the CAT hosted the country’s major commercial banks and financial institutions on a field tour of its Bunda Smart Farm. The tour also helped the banks to explore areas of collaboration with the CAT on how to support smallholder farmers' financial needs. Furthermore, the tour oriented the financial institutions on what Hortinet Foods Limited - one of CAT agribusiness partners - is doing to integrate smallholder farmers into the banana value chain.

CAT Executive Director Macleod Nkhoma spoke on the need for strong partnership between the CAT and banks to better support smallholder farmers with their financial capital. Speaking on behalf of MyBucks Bank, Careson Malika said banks were ready to support banana production by providing the needed financing capital to farmers who are in groups or cooperatives and in partnership with other organizations. “Without speaking on behalf of other banks, as MyBucks, we are good to go and want this initiative to be implemented in different areas and districts. We are interested in having a social impact. We have loved this banana farming because apart from helping you farmers, it will also help the country save forex because we will be buying bananas from within the country,” he said. Besides MyBucks, the following banks and financial institutions as well as organizations patronized the event: Standard Bank, National Bank, CDH, FDH, NBS, FCB, Export Development Fund, and Opportunity International. Partner organizations were Hortinet, Agricultural Services and Supplies Limited (ASSL) and Agricultural Transformation Initiative (ATI).
Farmers showing Mbeya fertilizer after completing the exercise

HARNESSING MBeya FERTILIZER AS ALTERNATIVE TO INORGANIC FERTILIZER IN AGRICULTURAL PRODUCTION

Fertilizer plays a crucial role in agricultural production. However, recently, there has been a spike in prices due to disruption of the global supply chain caused by the war in Ukraine and the COVID-19 pandemic. Inorganic fertilizers have proven to be unaffordable to most smallholder farmers. To help farmers overcome the challenge in accessing inorganic farmers, on 15th November, over 60 smallholder lead farmers participated in a training session on how to make Mbeya fertilizer - a type of fertilizer where manure is used. The training session took place at CAT-NRC Smart Farm. In his opening remarks, CAT Director of Science, Technology and Innovation Dr. Geoffrey Kanangiri asked farmers to consider using Mbeya fertilizers in the wake of increased chemical fertilizer prices. Lead facilitator, NASFAM Farm Services Coordinator Gloria Kasongo, engaged the farmers in mixing 20kgs of maize bran, 5kgs of wood ash, 20kgs of livestock manure, 10kgs of chemical fertilizer and 10 liters of water to produce 50kg bags of Mbeya fertilizer. "This Mbeya fertilizer is cheap because one bag of inorganic fertilizer produces five bags of Mbeya fertilizer, which is used for both basal and top dressing, just like inorganic fertilizer," she told the farmers. "Apart from that, you feed both the plant and the soil, which is not the case for inorganic fertilizer as it only feeds the plant," she added. Kemiton Mbelekete from Khwidzi village, T/A M'bwatalika in Lilongwe vowed to make his own Mbeya fertilizer following the training. "I promise to make my own Mbeya fertilizer. I already have maize bran and manure, and will just add a little inorganic fertilizer to it," he told fellow farmers drawn from villages around the Smart Farm and other areas in Lilongwe Rural. Group Village Headman Maziro of the area urged farmers to try Mbeya fertilizers. "We are going home to tell those who have not come today that Mbeya Fertilizer is the way to go. We will use various forums such as funerals and community meetings to spread this message," said the chief, while thanking CAT for organizing the learning event. The event was graced by several partners such as NASFAM, Good Soil, Hortinet Foods Limited and the Foundation for a Smoke-free World through Agriculture Transformation Initiative (ATI) - our funders.
On 28th October, a group of 36 tomato-growing smallholder farmers under Kaphatiyi Cooperative in Mchinji visited CAT-NRC Smart Farm in Lilongwe to learn more about increased tomato production and incomes. During the visit, the farmers attended a research dissemination session of a study eight master’s degree students of Israel’s Tel Aviv University conducted on the effectiveness of a net-house in reducing pest infestations in tomatoes. CAT provided technical support to the students to do the four-month study at its Smart Farm, with funding from the Foundation for a Smoke-Free World through Agricultural Transformation Initiative. Ides Samson, 42, who is treasurer of the cooperative said she was excited to physically visit the farm to learn more about how net-houses contribute to increased tomato production. "Back home, we are used to growing tomatoes on open fields. But here the students have told us how net-houses can help us increase production and earn more. We have learned that there are also reduced production costs growing tomato in the net-houses than when you grow tomatoes on open grounds," said Ides, a tomato farmer from Kалиnde Village, T/a Mduwa in Mchinji. Another farmer, Lukas Nkha, 64, said: "This is the first time I have seen a net-house. I have learnt that with this technology, a farmer is assured of high yields per unit area and therefore more income from the market. We want to see if we can adopt this net-house technology," said Lukas. CAT Executive Director, Macleod Nkhoma, applauded the farmers for coming to the Smart Farm to learn more about various technologies that would help them increase tomato yields and incomes to better support their families. The research dissemination session was sponsored by Small Fam Cities Africa – a farmer centric organization based in Lilongwe which buys produce from smallholder farmers and offers them wide-ranging agricultural extension services to enhance productivity.
CAT team visit to Theophilus Investment showing Nanana Peanut Butter produced by the company

The farmers were from Mwandama Cooperative within Thondwe Extension Planning Area in Zomba. It was facilitated by two Groundnut Technicians - Tonike Banda and Evelyn Musopole - from Chitedze Research Station in Lilongwe, under the Department of Agricultural Research Services of the Ministry of Agriculture. This initial training aimed to equip the farmers with proper agronomic practices to increase their productivity. It covered areas such as land selection, land preparation, selection of right varieties, planting, and common diseases of groundnuts. The farmers made a request for a training to CAT during a visit on 13th October at Mwandama Cooperative Centre.

US-BASED CAT PROJECT DIRECTOR VISITS MALAWI FOR TECHNICAL SUPPORT AND PARTNERSHIP BUILDING

Samuel Karnis, CAT Project Director based in U.S., in October visited Malawi to engage the CAT program team on various areas of technical expertise through exchange of ideas, lessons and best practices on effective and efficient project implementation models and strategies to support smallholder farmers’ diversification agenda. His visit also helped to cement the team’s collective resolve to enhance productivity and commercialization of various agricultural value chains and innovations among smallholder farmers. Realizing the importance of deepened, integrated and collaborative partnerships which are necessary for achieving agricultural transformation in the country, he also met with several of CAT key stakeholders and development partners. Implementation of the CAT consortium project in Malawi is led by Land O’Lakes Venture37 which is headquartered in U.S.
DEPLOYMENT OF GROUND SENSORS TO PARTNERS’ SITES FOR CAPTURING AGROMETEOROLOGICAL DATA

Good agriculture must be data-driven and anchored on evidence to properly inform decision-making both on and off farm. In Malawi, some of the challenges being faced by smallholder farmers are the lack of information on how they can respond to climate change including the impacts of rising temperatures, unpredictable rainfall and extreme weather events on crop yields, pest, and disease incidence. They also lack information on irrigation application decision making process, soil moisture, and organic fertilizer application. These challenges can therefore be minimized by utilizing ground sensors as a key agrotechnology to enhance agricultural productivity. This is why the CAT developed these low-cost, networked ground sensing systems for collecting agrometeorological data in Malawi. The ground sensors are vital tools for measuring weather, temperature and soil moisture which help farmers make informed decisions about their agricultural production. Using these ground sensors, CAT has been able to monitor agrometeorological data to make recommendations on irrigation application regimes in all sites where they are placed.

This has increased irrigation efficiencies, reduced water usage while providing high moisture level in the soil. In October and November, the CAT therefore deployed ground sensors at its Smart Farms and partners’ farms in Zomba, Kasungu, Mchinji and Salima belonging to Bayer, Department of Agricultural Extension Services Malawi, Pyxus Agriculture Limited, Malawi, AgDiv, Theophilus Investment, Global Seeds, and Teren Investments, among others.
“Banana Production Has Huge Untapped Potential to Exploit” – Hortinet Foods Limited

Banana production is a rising giant among the value chains in Malawi. Agricultural experts say this value chain has huge potential to turn around the country’s struggling economy which is so much dependent on one cash crop for export - tobacco. They argue that encouraging and supporting smallholder farmers to diversify into banana production would make a difference in their life because the crop is profitable. This is why on 13 October, the CAT team visited the banana production site of Hortinet Foods Limited to appreciate the entire banana production cycle, its business growth, opportunities and how it is able to support 900 smallholder banana farmers in its impact areas within Lilongwe and Dowa. The company’s core business is to cultivate horticultural produce, provide tissue culture plantlets and training in organic agronomic techniques to smallholder farms in Malawi. It's Managing Director, Frankie Washoni, took the CAT team around the company’s production premises in Area 25, Lilongwe. “We have adequate capacity to supply across the country. This country’s economy can dramatically change if we can support the banana industry. Currently, banana production has huge untapped potential to exploit,” he said. Hortinet Foods Limited – one of the CAT partners - is also showcasing two banana varieties of William and Grand-9 at the CAT-Bunda Smart Farm.
The Malawi University of Science and Technology (MUST), through its Institute of Industrial Research and Innovation, hosted innovators in food production on 15th November at Natural Resources College in Lilongwe. The aim of the event was to identify the final food product innovations that would be supported by MUST in collaboration with CAT and supported by the Agricultural Transformation Initiative. The successful teams will proceed to build their capacity at MUST campus. Deputy Director of Nutrition in the Department of Agriculture Extension Services Silvia Mapanje - who was Guest of Honour, hailed some smallholder farmers for taking part in the challenge, saying “this clearly shows how smallholder farmers can contribute to both the university, program and national agenda.” Mapanje said it was gratifying to note that the challenge was contributing directly to the country’s agriculture policy whose goal is to achieve a sustainable agricultural transformation that would result into significant growth of the agriculture sector, expanding incomes for farm households, improved food and nutrition security for all Malawians and increased agricultural exports. She told the attentive innovators: “You will be the first pioneers of food product innovation in Malawi. This is exciting for the ministry and all implementing partners and I hope the outcome at the end of the incubation of successful innovations will be one that inspires others to develop localized innovative food products to our everyday challenges.” In attendance also was the CAT Executive Director Macleod Nkhoma. MUST, a member of the CAT Consortium, initiated the Grassroot Food Product Innovation Challenge in April 2022 to allow smallholder farmers, particularly women, to commercialize their food product innovations through the university.
Nathan Thindwa, 47, is a dairy farmer and Artificial Insemination (AI) Technician working with Muliko Livestock Services (MLS) in delivering AI service to other dairy farmers under Chipungu Dairy Bulking Group in Nkhata Bay.

Currently one of few AI technicians still operating in Malawi, Nathan trained in AI 10 years ago. “Since 2008, the government and NGOs trained over 20 AI technicians. Many of them dropped along the way because of several reasons including lack of quality semen, poor semen cold chain maintenance, limited knowledge in heat detection on the part of farmers and lack of equipment. These contributed to as low as 3% conception rate. With this, many farmers lost confidence in us,” Nathan explains. Nathan blames the model which was used as it made them difficult to maintain the cold chain for semen. “We used to offer the AI services on loan i.e. the dairy farmers could only pay for the services after the cooperatives and after milk bulking groups had paid them at the end of the month for the milk to sell. This made it difficult for us as AI technicians to find money to replenish the Liquid Nitrogen and this compromised the semen quality,” he says.

“Since we are also part of the community, dairy farmers insisted that we offer our services for free because they are the ones who selected us be trained as AI technicians and therefore expected us to work in the community as volunteers,” Nathan, a proud father of six, adds.

Now things have changed for the better. Nathan hails MLS for introducing a more sustainable model, saying when the company came, it engaged them on challenges they faced and identified possible solutions.

“MLS conducted a refresher training for all the AI technicians, trained dairy farmers in dairy breeding with emphasis on heat detection, introduced periodic semen viability tests and arranged a commission on every semen straw inseminated as incentive,” he says.

“The conception rate has also improved from less than 4% per service to 90%. There are no longer many repeated heats. Farmer’s confidence in my service has greatly improved.” Nathan recounts. Nathan waxes lyrical about the impact his relationship with MLS has had on him so far.

“On average, I make MK75,000 (US$75) per month from AI services. I use this money to pay school fees for my children, buy farm inputs and do some shares at my Village Savings and Loan group. I am currently constructing a house and use the money to pay the builders and buy some construction materials,” he says. One of his farmer clients, Yesaya Matengere, testified on how the AI services Nathan was providing had helped many farmers and improved services in the community.

“In the past we used to breed animals for three to four times before the animal could conceive, we spent a lot of money in paying for the non-effective artificial insemination services and feeding non-productive animals. But this has completely changed. Now we are able to see many farmers having two calves in 22 months which was rare in the past,” Yesaya, states, his face glowing with pride.
1. Launched in 2019 and funded by the Foundation for a Smoke Free World’s Agricultural Transformation Initiative for five years.

2. A consortium of four leading agricultural development and academic institutions namely; Land O’Lakes Venture37, University of Minnesota, Stellenbosch University, Malawi University of Science and Technology (MUST), and key partner in Lilongwe University of Agriculture and Natural Resources (LUANAR) which houses the CAT Smart Farms.

3. An inclusive science, technology, and business incubation center of excellence.

4. Targets 30,000 smallholder farmers through the 30 agribusinesses spread across the country.

5. Focuses on tobacco-reliant smallholder farmers as primary target to diversify into other value chains.

6. Helps smallholder farmers make economically viable, data-driven decisions for diversifying their livelihoods from tobacco dependence.

7. Works with 15 agricultural and seed companies at its Smart Farms to showcase innovations and technologies.
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<tr>
<th>INDICATOR</th>
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<th>COMMENT</th>
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<td>This includes all income from agricultural sources, the change is from baseline to year 2022, 66% of the farmers have experienced change.</td>
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Land O’Lakes Venture37 is implementing the CAT for a five-year period from 2019 to 2024 with support from the Foundation for a Smoke Free World through the Agricultural Transformation Initiative (ATI). The goal of the CAT is to transform Malawian agricultural systems and the lives of Malawian tobacco-reliant smallholder farmers by giving them access to inclusive innovation in agricultural science and technology through a range of commercialization channels.

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Group of smallholder farmers from Mchinji who came to the smart farm to learn about tomato production.