AATF
PROSPERITY THROUGH TECHNOLOGY

Annual Report 2022

Scaling up of innovative agricultural technologies for Africa


PWAN
GOLD

Scaling up of innovative agricultural technologies for Africa

Annual Report 2022

AATF
PROSPERITY THROUGH TECHNOLOGY

Nairobi, Kenya

AATF (2022). AATF Repositions: ***Scaling up of innovative agricultural technologies for Africa.*** Annual Report 2022. Nairobi, Kenya: AATF

ISSN 1817-5813

Editors: Nancy Muchiri, George Achia and Emmanuel Okogbenin

Design theme concept: Nancy Muchiri and George Achia

Design and layout: Undatech Innovations Limited, Nairobi, Kenya

Printing: Majestic Printing Works Limited, Nairobi, Kenya

Table of Contents

2022 Achievements at a Glance

171
Number of performance evaluations carried out in 2022

3,225.7mt
Total quantity of certified seed produced in 2022

458
Number of demonstration fields established in 2022

55
Number of varieties evaluated in 2022

34
Number of seed companies trained during the year

62
Number of field days conducted during the period

1,047
Number of journalists trained in science reporting across all OFAB countries

10
Number of biotech champions recognised for promoting science and biotechnology in Africa

Summary of 2018-2022 strategy milestones under each objective

Summary of 2018-2022 strategy milestones – diversifying agricultural technologies

Total farmers reached with AATF interventions

Cumulative target:
4,000,000
Cumulative 5-year achievement:
4,808,850
Percent achieved:
120%

Farmers accessing AATF technologies

Cumulative target:
4,000,000
Cumulative 5-year achievement:
3,854,621
Percent achieved:
96%

Number of varieties released

Cumulative target:
59
Cumulative 5-year achievement:
51
Percent achieved:
86%

Summary of 2018-2022 strategy milestones – accelerating commercialisation of agricultural technologies

Number of farmers aware of mechanisation activities

Cumulative target:
1,375,000
Cumulative 5-year achievement:
825,000
Percent achieved:
60%

Mechanisation operations conducted (ha)

Cumulative target:
80,000
Cumulative 5-year achievement:
52,901
Percent achieved:
66%

Number of farmers linked to off- takers

Cumulative target:
182,000
Cumulative 5-year achievement:
178,622
Percent achieved:
96%

Summary of 2018-2022 strategy milestones – creating an enabling environment

Governments engaged on policy deliberations

Cumulative target:
20
Cumulative 5-year achievement:
16
Percent achieved:
80%

Stakeholders reached through advocacy and outreach efforts

Cumulative target:
16,000,000
Cumulative 5-year achievement:
47,300,000
Percent achieved:
285%

List of abbreviations and acronyms

AfDB	African Development Bank
AU	Africa Union
AUDA-NEPAD	African Union Development Agency
BMGF	Bill and Melinda Gates Foundation
CEO	Chief Executive Officer
CFTs	Confined Field Trials
CGA	Cereal Growers Association
CJED	Calestous Juma Executive Dialogue
COMESA	Common Market for Eastern and Southern Africa
CORAF	West and Central African Council for Agricultural Research and Development
CSA	Civil Society Alliance
CSIR-SARI	The Council for Scientific and Industrial Research-Savanna Agricultural Research Institute
CSIRO	Commonwealth Scientific and Industrial Research Organisation
DRC	Democratic Republic of Congo
EAC	East African Community
ECOWAS	Economic Community of West African States
EGS	Early generation seeds
EU	European Union
FAO	Food and Agriculture Organisation
FAW	Fall armyworm
GAPs	Good agricultural practices
GCA	Global Centre on Adaptation
GM	Genetic Modification
GMOs	Genetically Modified Organisms
HTC	Hydrothermal carbonisation
IAR	Institute of Agricultural Research
ICOSEED	Integrated Community Organization for Sustainable Empowerment and Education for Development
IITA	International Institute of Tropical Agriculture

ISTRC	International Society for Tropical Root Crops
KEPSA	Kenya Private Sector Alliance
MT	Metric tons
NARS	National Agricultural Research System
NBMA	National Biosafety Management Agency
NEWEST	Nitrogen-use Efficient, Water-use Efficient and Salt Tolerant
NPO	Non-profit organisation
NPTs	National Performance Trials
OFAB	Open Forum on Agricultural Biotechnology in Africa
OMAs	OFAB Media Awards
PASTTA	Partnerships for Seed Technology Transfer in Africa
PBR	Pod Borer Resistant
PIDACC	Program for Integrated Development and Adaptation to Climate Change (PIDACC)
PVP	Plant Variety Protection
QBS	QualiBasic Seed company
REA	Research Executive Agency
RECs	Regional Economic Communities
RR	Round-up Ready
SADC	Southern African Development Community
SFSA	Syngenta Foundation for Sustainable Agriculture
SPR	Seed Production Research
SSA	Sub-Saharan Africa
STI	Science, Technology and Innovation
SUN	Scaling Up Nutrition
TAAT	Technologies for African Agricultural Transformation
TFP	Total factor productivity
UNECA	United Nations Economic Commission for Africa
USAID	United States Agency for International Development
USDA-FAS	US Department of Agriculture-Foreign Agricultural Service


AATF

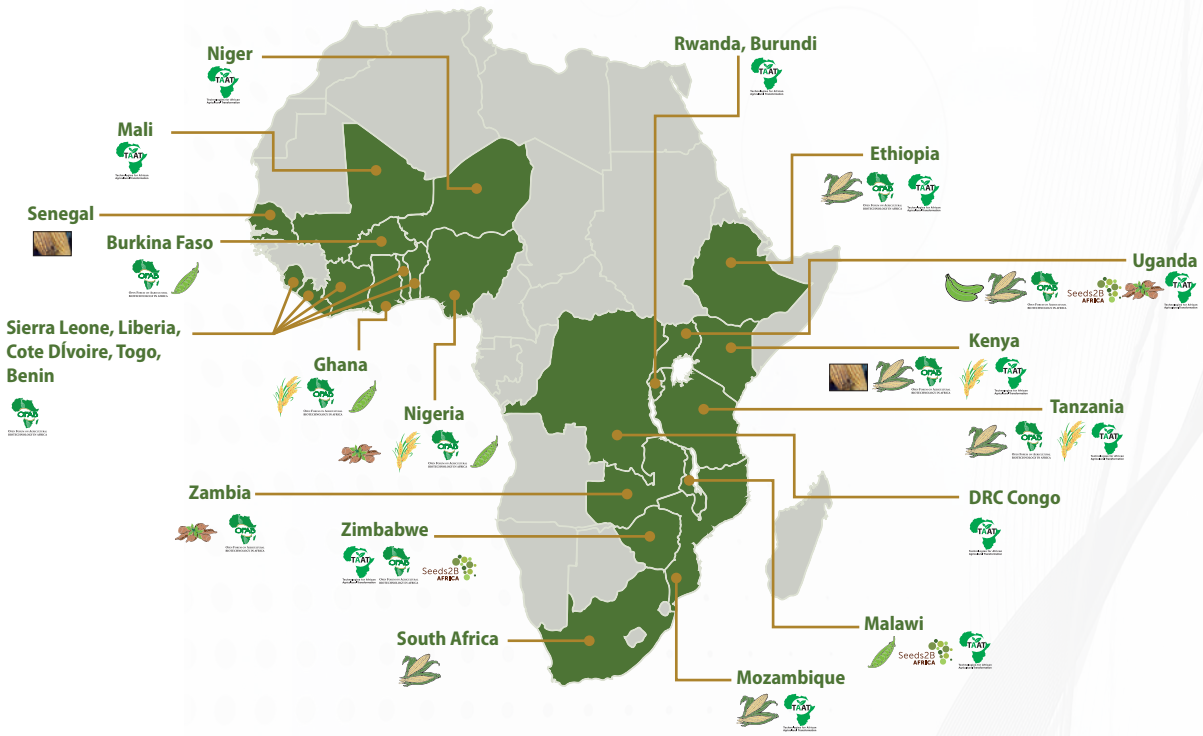
Who we are

AATF provides farmers in Sub-Saharan Africa (SSA) with practical technology solutions to overcome farm productivity constraints. Founded in 2003, AATF is driven by the vision of a prosperous, resilient, food and nutrition-secure Africa, where smallholder farmers' livelihoods are transformed through agricultural innovations.

Active in 24 countries in East, Southern and West Africa, over the past two decades we have emerged as one of the continent's foremost technology transfer facilitators, trusted by both private and public sector institutions. We work beyond the product development segment to help commercialise and scale sustainable, demand-based technologies designed to address specific agricultural challenges. Active across the whole technology lifecycle, we positively transform farmers' livelihoods and lives. Above all, we believe in providing the 'freedom to innovate'. Believing that product development should co-evolve in step with regulation, we build alliances with other service providers to strengthen Africa's evolving regulatory systems.

Our proven expertise as a programmes and partnership facilitator, weaving together a broad range of actors for technology transfer, is unparalleled in Africa. Importantly, we have also become a policy advocate and reputable convener, promoting dialogue to catalyse functional markets, seed systems and enabling environments for technology testing, delivery and adoption.

For more information, visit: *https://www.aatf-africa.org*



AATF projects' portfolio and footprint in Africa

Message from the Board Chairperson

Prof. Aggrey Ambali
Chairperson, Board of Trustees

NextGen technologies will deliver a transformative agriculture to the continent. They will not only improve crop yields, reduce the risk of crop failure, and result in an increase in farmer incomes, but will also create new opportunities for farmers due to their robustness to adapt to different agro-ecological zones.

Agricultural productivity is critical for meeting the food needs of a growing global population. It is also central to driving economic transformation in Africa (AfDB, 2020). Increasing agricultural productivity, is important for Africa given its low performance compared to Asia, whose agricultural productivity grew by 1.3 percent per year between 2008 and 2018, while Africa's average agricultural productivity grew by only 0.8 percent per year during the same period (FAO, 2020). Faced with the need to feed the growing population effectively and sustainably, Africa also needs to build thriving business communities and improve overall livelihoods. A key factor to improving productivity is adoption and use of new agricultural technologies and practices that respond to current and future needs of farmers backed by investments in research and development, utilization of irrigation instead of sole reliance on rainfed agriculture, mechanization, access to input and output markets, access to credit and rural infrastructure.

We have witnessed, on the continent and outside, the effectiveness of new and improved agricultural technologies in addressing key farmer and community challenges including climate change related problems such as frequent drought and the emergence of new pests and diseases, excessive use of harmful pesticides and chemicals, and low productivity due to low yielding germplasm and degraded soil nutrients.

We have seen major successes emanating from AATF endeavors to drive the agricultural transformation agenda in Africa through innovative technology. In recent years, we have experienced technological advancement towards enhancing productivity of key staple crops in Africa including maize, rice, and cowpea. What has clearly emerged is that with technology use, there is a significant difference in the crop performance and benefits to farmers.

Examples of game-changing technologies introduced to the continent through AATF interventions include the Pod Borer-Resistant (PBR) cowpea that was released to Nigerian farmers. The pod borer is one of the most destructive pests that can cause up to 80 percent reduction in cowpea grain yield and necessitates frequent insecticide use. The PBR cowpea technology not only provides protection against pod borer damage but also reduces the need for insecticide spraying to just twice per planting season, compared to eight times previously. This significantly minimizes the exposure of farmers to hazardous chemicals, resulting in better health and environmental outcomes.

In addition, the adoption of *Bt* maize hybrids that can mitigate effects of climate change especially moderate drought and losses to insects such as stem borers and fall armyworm, is set to revolutionize maize farming experience in the region, as the *Bt* safeguards farmer yields and product quality.

These technologies and innovations contribute to enhancing the Total Factor Productivity (TFP), which is an important measure in determining

the technological progress and innovation that can lead to long-term economic growth. In essence, an increase in TFP means that the economy is producing more output with the same amount of inputs, which can result in higher standards of living and incomes.

It is recognized that many African countries are making progress regarding adoption of improved agricultural technologies to reduce malnutrition and food insecurity towards attaining Sustainable Development Goals. Nonetheless, Africa still faces challenges and has not fully overcome them, with many governments in the region having prioritized agricultural development goals as key to attainment of their overall economic development including increasing agricultural productivity and incomes, especially for small-holder farmers.

The current gains in agricultural transformation need to be safeguarded as the continent also seeks to grow its technological advancement beyond the entry level genetic materials and farmers yearn for more effective technology solutions that will yield more value in a cost-effective way to them. This calls for the need to deliver "technology packages" to farmers, or bundling of technologies, and combining traits that will yield super (NextGen) technologies that are fast and efficient in addressing farmer needs.

NextGen technologies will deliver a transformative agriculture to the continent. They will not only improve crop yields, reduce the risk of crop failure, and result in an increase in farmer incomes, but will also create new opportunities for farmers due to their robustness to adapt to different agro-ecological zones. As AATF continues to deliver biotech and conventional technologies that target farmers' needs, it will also work towards improving the existing technologies into NextGen products capable of effectively addressing the many challenges these farmers are facing.

In recognition of the complexity of addressing food and nutrition security concerns in Africa, technological solutions should include a diverse range of interventions and applications tailored

We have seen major successes emanating from AATF endeavors to drive the agricultural transformation agenda in Africa through innovative technology. In recent years, we have experienced technological advancement towards enhancing productivity of key staple crops in Africa including maize, rice, and cowpea.

to different agro-ecological conditions and the unique needs of farmers. This is the approach that AATF takes. The adoption of climate-smart agricultural practices, such as the use of drought-tolerant crops and conservation farming techniques, will help farmers to adapt to changing climatic conditions and reduce their vulnerability to climate-related risks. Precision agriculture technologies such as drones, Global Positioning System mapping, and sensors will help farmers to optimize their use of resources, such as water, fertilizer, and pesticides, thus reducing waste and improving efficiency.

As we commence implementation of the new AATF strategy 2023 – 2027, AATF will ensure it continues to deliver impact to farmers by diversifying agricultural technologies. It will expand the frontiers for NextGen products to improve agricultural productivity, ensure food security, and promote economic growth in Africa.

Our heartfelt appreciation goes out to the committed AATF staff, management, partners, AATF Board of Trustees, investors, and other professionals who have joined us in fulfilling our commitment to ensuring food security for smallholder farmers in Africa. Your invaluable contributions have made 2022 an outstanding year for us. We extend a warm invitation to each one of you to continue your journey with us in 2023 and beyond, as we strive to create a brighter future for Africa.

Prof. Aggrey Ambali
Chairperson, Board of Trustees

Message from the Executive Director

Dr. Canisius Kanangire,
AATF Executive Director

We continue to make ongoing efforts to bridge the information gap and misinformation surrounding agricultural biotechnology to improve understanding of the technology in Africa. During the year, AATF undertook training of media professionals to increase the quality and quantity of biotechnology reporting.

Our Strategic Framework for 2018-2022 ended last year, and we have since commenced a new Strategic phase for 2023-2027, *Scaling for Impact*. The AATF new Strategic Framework outlines an ambitious plan to enhance technology development and commercialisation for African farmers, with the ultimate goal of achieving a prosperous, resilient, food and nutrition secure Africa. We have demonstrated a renewed commitment to this vision by focusing on accelerating product development and intensifying efforts towards commercialisation to facilitate uptake by farmers, with our focus now shifted towards improving existing technologies and transforming them into super (NextGen) technologies capable of effectively addressing the many challenges faced by African farmers due to emerging challenges in the region.

Diversify agricultural technologies accessed for use in SSA

The year saw four countries make impressive progress towards getting biotech products to market. The government of Ethiopia granted its first environmental release approval to a transgenic food, TELA maize, in April 2022 paving way for establishment of national performance trials (NPTs) while Mozambique progressed its TELA maize to multi-locational trials as one of the final steps towards full deregulation of the maize in the country. Ghana became the second country on the continent to permit the environmental release of the Pod Borer Resistant Cowpea, also its first transgenic food to gain the approval, granting it permission to proceed to variety testing and eventual product commercialisation. Kenya also made grand steps towards getting its first Bt maize, TELA, to farmers, following pronouncement from its highest office, the presidency, to move towards cultivation. Whereas court actions have caused delays in getting the TELA seed to seed companies for multiplication, stakeholders and the government are preparing for a positive outcome. With these developments, the continent is seeing more biotech food products making their way into the market and we believe this will help demystify the technology and enhance understanding and uptake.

Farmers in South Africa will soon benefit from TELA Roundup Ready (RR) hybrids following identification of five hybrids for registration. The TELA Roundup Ready maize was a special request by South African farmers who are already used to planting transgenic maize and other crops.

Together with our partners, we facilitated the release of two new crop varieties to the market that included one conventionally bred, climate-smart, DroughtTEGO® hybrid maize variety in Ethiopia, and

one new Soybean variety in Zimbabwe. The maize hybrid recorded an impressive 10.4 percent yield advantage, with 7.4 metric tons per hectare (tons/ha) compared to the best check (BH546) that yielded 6.7 tons/ha.

We are hopeful that farmers in Kenya will soon have their hands on hybrid rice seed following successful on-farm demonstrations where results showed a yield advantage of up to 2t/ha over the best commercial check. We continue building our product pipeline to ensure injection of new, useful products and traits to farmers. We carried out 147 performance evaluations for 53 crop varieties including maize, cowpea, and rice to contribute towards delivering more varieties to farmers in Africa. We are witnessing promising developments such as with three (DroughtTEGO) hybrids that recorded about 26 percent higher yield than the check during the first NPTs in Nigeria.

We are also making good progress in the development of the second generation of PBR Cowpea, referred to as PBR CowpeaXTRA that combines two *Bt* genes that give the cowpea durable resistance to the pod borer. In 2022, AATF and its partners produced two promising lines that are resistant to the insect, *Maruca vitrata*, by combining two genes (Cry1Ab and Cry2 Ab) and are currently continuing with cross pollination breeding at the Commonwealth Scientific and Industrial Research Organisation (CSIRO).

We are witnessing promising developments such as with three (DroughtTEGO) hybrids that recorded about 26 percent higher yield than the check during the first NPTs in Nigeria.

Accelerate commercialisation of agricultural technologies for improved farmer livelihoods

By the end of 2022, we had, together with our partners, produced a total of 3,277.6 mt of certified seed for different products including groundnuts, beans, soybean, cowpea, and maize. This amount of seed can be used to plant more than 78,600 hectares of farmland and is sufficient to meet the planting needs of 227,750 farmers, assuming each farmer plants per acre 20kgs of groundnuts and beans, 40kgs of soybean, 2kgs of cowpea, and 10kgs of maize respectively.

The issue of seed production continues to be a challenge and we maintain our commitment towards catalyzing sufficient, quality and timely seed production to enable farmers fully benefit from these new traits. In this effort, we continue to engage and work with our QualiBasic and EcoBasic seed companies for production of quality foundation seed and training of technical staff from different seed companies in Kenya and Nigeria on quality seed production and dissemination.

We continued to build awareness and educate farmers and extension service providers on new technologies and products that also helps to raise interest, demand, and uptake. Working with partners therefore, we established 491 demonstration fields and held 68 field days that served as excellent platforms to reach farmers.

Creating an enabling environment for increased uptake and use of agricultural technologies

A key development during the year that will be critical to attaining the goals we have set in the new strategy was acceptance by Dr. Goodluck Jonathan, former President of Nigeria, to serve as the AATF Agricultural Technology Ambassador. This role involves advocating for the advancement of Africa's agricultural goals and economic growth through use of innovative technologies and increased investment in agriculture. With this acceptance, Dr. Goodluck will help raise visibility on matters STI at the continental level for serious discussion and consideration.

During the year we celebrated the decision by the Government of Kenya to lift the 10-year ban on cultivation and importation of genetically modified (GM) crops, and allow open cultivation and importation of white GM maize. The announcement, made by the presidency, boosted plans for commercialisation of TELA Bt maize in Kenya in addition to giving confidence to scientists. We also broadened our biotechnology footprint in Africa with establishment of two more OFAB chapters in Malawi and Mozambique, with the aim of promoting the growth and advancement of agricultural biotechnology on the continent. This expansion introduces biotech conversations into the southern African region giving AATF a foothold on which to continue its work with the Southern African Development Community (SADC), the Common Market for Eastern and Southern Africa (COMESA) and the other regional and sub-regional organisations based in the area.

Our accomplishments during the strategic period of 2018-2022 demonstrate our determination to continue transforming livelihoods of farmers in Africa. Overall, 4.8 million farmers were reached through our different interventions during the period, with over 3.8 million farmers accessing AATF seed-based technologies.

The development of a bio-based economy in Uganda, Côte d'Ivoire, Ghana, and Senegal received a boost with acceptance of 11 bio-based technologies by stakeholders for implementation in the countries following successful profiling, validation and evaluation of the feasibility of the technologies from economic, social, cultural, environmental and policy perspectives. The work was carried out through our Bio4Africa Project.

We continue to make ongoing efforts to bridge the information gap and misinformation surrounding agricultural biotechnology to improve understanding of the technology in Africa. During the year, AATF undertook training of media professionals to increase the quality and quantity of biotechnology reporting.

AATF also facilitated different dialogue platforms to build awareness and inform decision-making on biotech in Africa. Special attention was directed at high-profile engagements aimed at creating the necessary conditions for the advancement of biotechnology on the African continent. Targeted efforts were made to engage with ministers responsible for science, technology and innovation, education, and agriculture in the countries where AATF operates. The dialogue platforms included the 2nd Africa-Wide Science, Technology, and Innovation (STI) Conference held in April 2022 in Kigali, Rwanda, that included ministerial and director generals round tables and high-profile engagements with key government officials from Rwanda, Malawi, Mozambique and Burkina Faso. The Ministerial roundtable made a commitment to adopt relevant technologies, such as biotechnology and

Dr. Martin Fregene, Director, Agriculture and Agro-Industry, AfDB, and Dr. Canisius Kanangire, AATF Executive Director during a KIKAO recording.

other emerging technologies to bolster food systems, increase resilience, and revolutionize African agriculture.

We also launched and aired a series of STI conversations dubbed '*KIKAO*', that aim at highlighting major breakthroughs in African agriculture while exploring pressing issues related to the continent's progress in agricultural transformation.

In appreciation of science supporters on the continent, we launched the biotech champions recognition program through OFAB towards the end of the year that saw former President of Tanzania and chair, Africa Food Prize H.E Jakaya Kikwete being recognized for his contribution in this area. We also contributed to partner continental platforms such as the AUDA-NEPAD Calestous Juma Executive Dialogues.

Our accomplishments during the strategic period of 2018-2022 demonstrate our determination to continue transforming livelihoods of farmers in Africa. Overall, 4.8 million farmers were reached through our different interventions during the period, with over 3.8 million farmers accessing AATF seed-based technologies. Our advocacy, outreach, and regulatory interventions benefitted an additional 47.3 million stakeholders and farmers.

We have learned some important lessons from the just concluded strategy phase, which highlights the critical role of the enabling environment, commercialization, stewardship, seed systems, and market development in achieving our mandate.

I would like to express my deepest gratitude to the AATF Board of Trustees for their invaluable guidance and unwavering support, as well as our partners and investors for their continued assistance. I also extend my appreciation to the AATF staff for their dedicated efforts throughout the year. I would like to reaffirm AATF's commitment to delivering on our promise to smallholder farmers in Africa through our projects and partnerships. We welcome your feedback on this report.

Dr. Canisius Kanangire,
AATF Executive Director

Strategic Objective 1:

Diversifying agricultural technologies accessed for use in Sub-Saharan Africa

In over two decades now, AATF has strived to transform Africa's agricultural landscape by accessing and making available an array of technologies and innovations from across the globe, including seed-based and non-seed based agricultural technologies, that offer strong potential to improve agricultural productivity for smallholder farmers in Africa. AATF believes that increasing agricultural productivity per unit farm area will have the greatest impact on smallholder farmers through enhanced income and increased capacity to adopt technologies, leading to food and nutrition security and better livelihoods for them.

Building on past progress made, AATF intensified efforts in 2022 towards diversifying agricultural technologies for farmers in SSA resulting in solid results and outcomes.

The Government of Kenya lifted the ten-year ban on importation of genetically modified (GM) crops paving way for open cultivation and importation of GM products. This favorable development provides good opportunity to release and commercialise TELA Bt maize in Kenya. The TELA project had initiated several activities including on-farm demos and production of seeds to prime-the pump to aid acceleration of the commercialization efforts once the ban is lifted.

Following the success with Nigeria, Ghana became the second country on the continent after Nigeria to deregulate (environmentally release) the Pod Borer Resistant (PBR) Cowpea thus paving the way for the next steps of activities that will lead to the commercial release of PBR products to farmers. Over 150 NPT trials are now underway as part of the process. The permit was awarded by the National Biosafety Authority to the Council for Scientific and Industrial Research-Savanna Agricultural Research Institute (CSIR-SARI). With this second approval, the

STRATEGY MILESTONES

4.8 Million
Total farmers reached with AATF interventions

3.9 Million
Farmers accessing AATF technologies

51
Number of varieties released

47.3 Milliom
Stakeholders reached through advocacy and outreach efforts

PBR Cowpea continues to make progress towards commercialization. Several product development activities to transfer the PBR traits (Cry1Ab) into many farmer-preferred varieties have advanced significantly both in Nigeria and Ghana to enhance agroecological adaptation spectrum for PBR cowpea deployment. The diversification of the genetic background of the PBR cowpea is crucial to aid uptake and adoption of the products for large scale benefit of target farmers and improved cowpea-based food systems.

In addition, efforts at stacking two *Bt* genes (Cry1Ab gene with Cry2Ab) for the development of a second-generation product of PBR Cowpea (PBR CowpeaXTRA) which combines two *Bt* genes in one product for durable resistance to the pod borer is making good progress. Two candidate events with good protein expression level for resistance to the Maruca pest have been identified. It is expected to improve resilience of the PBR cowpea.

Under the Bio4Africa Project good progress has been made in efforts to strengthen bio-economy in Africa. The project assessed 11 bio-based products and associated technologies. It also evaluated the policy and regulatory environment for its appropriateness to the development of a strong bioeconomy in the project countries (Uganda, Côte d'Ivoire, Ghana, and Senegal). Results indicate good acceptance of all the bio-based products and linked technologies by stakeholders indicating good prospects for bio-economy in these countries.

New products released

In 2022, two new crop varieties were released under AATF-led projects. Through the TELA Maize Project, a conventionally bred, climate smart, DroughtTEGO® hybrid maize variety, BH5212, was released in Ethiopia, recording an average yield of 7.4 tons/ha (with 10.4 per cent yield advantage over commercial checks in the market). The new release brings to two the number of commercially registered conventionally bred climate smart, DroughtTEGO® hybrids in Ethiopia. Thus far, the TELA project has released a total of 125 hybrids across seven countries that strengthens the diversity in the maize portfolio of AATF.

AATF facilitated the release of one variety of Soybean in Zimbabwe, (TGX –FM19 -2002) under the Seeds2B project. The variety was released for demonstrating high average yields of 2.2-2.5 mt/ha, improved adaption and market preferences (high oil and protein content for processing).

Promising products nearing commercial release

New superior genotypes identified as top performers in the breeding and testing pipelines were advanced forward for more evaluation under national performance trials in final steps towards their commercial release. A total of 171 evaluation trials were

conducted for maize, PBR cowpea and rice under AATF coordinated projects which broaden and improve on the performance of previously released varieties.

Under the TELA Maize project, 12 TELA insect-resistant (*Bt* MON89034) hybrids were evaluated in national performance trials (NPTs) for insect protection at 12 sites, two during the dry season planted in March 2022 and 10 during the wet season under stem borer and fall armyworm infestation in Nigeria. Preliminary results showed that the three top performing TELA *Bt* Hybrids had 14 per cent (0.9 t/ha) greater yield than the best check – WE8206. Six best performing TELA *Bt* hybrids were nominated to be advanced for further participatory on-farm evaluations across the country in June 2023 before approval for commercialisation.

Four multi-location value-for-cultivation and use trials were conducted for five TELA *Bt* MON810 hybrids in Mozambique following the provisional approval granted by the government for this evaluation. Field performance evaluations showed that three of the hybrids performed well across all locations. The trials will be repeated in the 2022/2023 wet season to identify the most promising hybrids for variety release recommendation.

55

Number of varieties evaluated in 2022.

In South Africa, 10 multilocational evaluation trials were carried out for 29 TELA *Bt* MON89034 and Round-up Ready (RR) hybrids that are tolerant to herbicide for weed control. Results indicate that five TELA-RR hybrids with similar yields as best commercial checks (6.8–8.0 ton/ha) were identified and are now pending approval for variety release and registration.

Following the environmental release of the PBR cowpea in Ghana, the project team initiated large scale trials that are required to guide on the performance of PBR cowpea for its commercial release to farmers. Five on-station, and 100 farmer-managed trials were established across five regions of the country. To jump-start commercialisation in anticipation of the commercial release of the product in the country, 12 acres have been planted for seed multiplication.

Table 1: Summary of evaluation trials conducted in 2022.

Crop	AATF Project	Country	Trial	Number of evaluations	Number of varieties
Maize: TELA®, transgenic insect-resistant	TELA	Nigeria	NPTs	12	12
Maize: TELA®, transgenic insect-resistant	TELA	Mozambique	NPTs	4	5
Maize: TELA-RR hybrids	TELA	South Africa	NPTs	10	29
Cow pea	PBR Cowpea	Ghana	NPTs	100	1
Cowpea	PBR Cowpea	Ghana	CFTs	5	1
Rice	Hybrid Rice	Kenya	On farm	39	4
Rice	Hybrid Rice	Togo	On- farm	1	3
Total				**171**	**55**

A group of farmers during the hybrid rice field day in Kirinyaga County, Kenya.

The Hybrid Rice Project continued with the evaluation of top performing lines showing good potential for superior yields over previously released hybrid rice varieties. AATF has completed first season of 13 on-farm trials/demos for four varieties in three of the nine rice growing hubs in Kenya in May 2022. Results indicate the best hybrid AH18007, had higher yield of 7 t/ha compared to the best commercial check, Komboka which recorded 5 t/ha. The project further initiated a second season of 26 on-farm demos in seven of the nine rice growing hubs in Kenya in July 2022 to prime the market for commercialisation.

At the request of the Togo Government, AATF provided three elite rice hybrid varieties for on-farm trials in September 2022 through the Alliance for Hybrid Rice in Africa (AHyRA) platform.

Mr. James Munene, a field officer, ICOSEED, measuring moisture content after hybrid rice harvest in Kirinyaga County, Kenya.

Ensuring smallholder farmers access new technologies

In line with the corporate vision for a prosperous, food and nutrition secure Africa, AATF had committed to transform and improve the livelihood of at least 16 million smallholder farmers in SSA by the end of its Strategic Plan 2018–2022. AATF has efficiently met and in some cases exceeded targets set for the just concluded Strategic Plan. The outcome and achievements recorded attests fully to the commitment of AATF and its partners to providing farmers in Africa with wider reach to innovative and transformative technologies. We recorded 120 per cent additional farmer reach above target pre-set (over 4.8 million were reached against a target of 4 million farmers planned). Of these, a total of 3.9 million farmers accessed technologies, while over 170,000 reached markets as a result of efforts by AATF and its partner. Through advocacy, outreach, and regulatory interventions about 47.3 million stakeholders were engaged far above the 16 million targeted under the just ended strategy.

Mainstreaming gender into AATF projects

AATF has institutionalised a robust gender mainstreaming strategy aimed at ensuring equitable access to innovative agricultural technologies, resources, opportunities and benefits for all gender and vulnerable groups in SSA.

In 2022, a gender-based study on time savings from mechanisation operations for women and men in the cassava value chain was conducted in Nigeria in collaboration with Tanager to understand how time savings gained by women and men are beneficially used compared to manually operated farming. Results indicate that women accrued many benefits by using mechanisation operations including time savings for food preparation and childcare, higher yields and incomes, and a reduction in workload and stress leading to better livelihoods. In addition, the findings revealed that service affordability is the main barrier to adoption of mechanization services by smallholder farmers. One of the recommendations from the study was to provide mechanization for cassava processing tasks that are typically carried out by women, such as peeling, grating, and chipping. This would not only save time for women but also reduce the physical burden of these tasks.

Nutrition integration

Nutrition integration into projects at AATF was systematically approached by conducting studies to identify best or appropriate approaches for strengthening delivery of our interventions and technologies for improved nutrition security. For the PBR Cowpea project, AATF, in close partnership with Tanager, conducted a farmer perception study on the impact of PBR cowpea adoption on household nutrition. In principle, it aimed to inform the development of appropriate nutrition-sensitive interventions that could

cost effectively result in the most effective change for improvement in the overall nutrition wellbeing of cowpea farmers and other stakeholders The findings showed that farmers are aware of the nutritional importance of cowpea. However, there is a need for more nutrition education on diet diversification, income allocation, and storage practices to improve nutritional outcomes.

AATF has made good strides in identifying and leveraging on strategic platforms in the public and private sectors that could offer strong synergies to drive its mission for stronger and effective implementation of its nutrition goals. AATF has engaged with the Food and Nutrition Linkage Working Group of Kenya, coordinated by the Agri Nutrition Unit of the Ministry of Agriculture and Livestock Development in Kenya. AATF is now a member of the Scaling Up Nutrition (SUN) movement of Kenya in efforts to strengthen partnership for its nutrition interventions in Kenya.

Looking forward

Over the next five years, AATF's focus will be directed at efficiently delivering both biotech and conventional technologies to meet the requirements of African farmers. In line with increasing demand to strengthen resilience of African food systems against climate change and new pests, multiple traits are being stacked into advanced (NextGen) versions of existing products that can effectively tackle numerous obstacles faced by African farmers, resulting in higher value for the farmers.

Table 2 : Summary of five-year milestones under strategic objective one

Indicators	Cumulative Target	Cumulative 5-year Achievement	Percent achieved (%)
Total farmers reached with AATF interventions	4,000,000	4,808,850	120
Farmers accessing AATF Technologies	4,000,000	3,854,621	96
Number of varieties released	59	51	86
Stakeholders reached through advocacy and outreach efforts	16,000,000	47.3 million	285

SO1

Strategic objective one, five-year strategy implementation

The AATF 2018-2022 strategic plan accomplished substantial deliveries in farmer/ stakeholder reach, product development and deregulation of biotech products in a number of countries that represents major breakthroughs for agricultural transformation. Based on targets of the strategic plan, AATF attained 120 per cent direct farmer reach. biotech crop deregulation was achieved in three countries (Ethiopia, Ghana, Nigeria) and the lifting of ban on transgenic products in Kenya that supports placement of these products in the market. AATF's advocacy, outreach, and regulatory interventions successfully reached over 47.3 million stakeholders that aided the new improvement in the technology transfer environment. Further, a total of 51 different crop varieties were released.

Strategic Objective 2:

Accelerating commercialisation of agricultural technologies for improved farmer livelihoods

Facilitating access and stimulating adoption and utilization of innovative technologies is the pragmatic means by which farmers can benefit from new traits, mechanical and digital technologies that are crucial to raising per unit area productivity under commercial agriculture. Improvement in on-farm yield performance of smallholder farmers is pivotal to enhancing profitability, increase incomes and improve standards of living of farmers.

STRATEGY MILESTONES

189,229
Number of farmers directly reached with information on AATF products

825,000
Number of farmers aware of mechanisation activities

52,901
Mechanisation operations conducted (ha)

178,622
Number of farmers linked to off- takers

Commercialisation of AATF technologies aims to ensure its accessibility, availability, adaptability, affordability, and sustainability to maximize farmer benefits from its utilization. This entails working with stakeholders along the food value chain, including both public and private sector partners, to develop well adapted products from innovative technologies, deploy with associated technology packages, scale up production under good agricultural practices (GAPs) and stewardship support including facilitating good distribution of quality products for better market access so that farmers can get value from the adoption and sustainable use of technologies. The ultimate goal is to transform subsistence farming into commercial agriculture for improved livelihoods of farmers, thus making their work more rewarding, while also contributing to the growth and development of the agriculture sector and the broader economy.

Commercialisation has been principally focused on three products from AATF projects - PBR Cowpea, Hybrid maize and Hybrid rice. Seed production was intensified to increase farmer access to these products in markets. AATF coordinated seed production processes among the national agricultural research systems, licensed seed companies, and out growers in the project countries where products are being commercialised. A total of 11.7 metric tons (mt) of PBR cowpea certified seed were produced in Nigeria, and

Performance of TELA Bt (right) versus non-Bt drought-resistant hybrid (left) under drought-stress and severe natural infestation of fall armyworm and stem borer in South Africa

this is adequate to meet planting demands of 5,850 farmers in the country. In efforts to rapidly increase foundation and certified seed production, AATF engaged ECOBasic Seed Company and the Institute for Agricultural Research (IAR), Nigeria, including providing technical and infrastructural support to boost production capacity including the use of irrigation, mechanized planting, insecticide spraying and fertilizer application.

Improved certified seed production of DroughtTEGO hybrids has resulted in significant seed business of the product by licensed seed companies in Kenya, Uganda, Tanzania, South Africa and Zambia. About 1,384mt of high-quality seed for 17 TEGO hybrids were sold by seed companies to farmers in different countries.

The Hybrid rice project continued with product promotion of released rice varieties and engagement of seed companies for seed multiplication to accelerate commercialization. Product promotion was undertaken through the setting up of 27 on-farm demonstrations in the rice growing regions of Central Kenya (Embu, Kirinyaga and Murunga) and Western Kenya (Migori, Kisumu, Homabay, Busia and Siaya) . The hybrid products showed yield advantage of about two tons compared to the non-hybrid varieties. The best products were h AH18007 and Pawn Gold Plus.

3,225.7mt
- total quantity of certified seed produced in 2022.

Strategic engagements fostered for an effective product delivery system

AATF strategically established a germplasm testing agreement with two farmer community-based organisations to coordinate on-farm demos within their network of farmers to prime the market for commercialisation of products. The Integrated Community Organization for Sustainable Empowerment and Education for Development Programme (ICOSEED) with over 1,000 farmers, and Cereal Growers Association (CGA) with a network of over 150,000 farmers will support the introduction of four new rice hybrids to farmers in Kenya.

Capacity strengthening for quality seed production and dissemination

Producing quality seed in a timely and efficient manner is a crucial component of the AATF stewardship and commercialisation process. AATF continues to nurture downstream relationships to accelerate product delivery to farmers.

To support maize seed production, six trainings were carried out for a total of 34seed companies during the year. In March 2022, AATF trained 22 seed production managers and officers from 18 seed companies on practical ways to improve seed productivity and assure quality of own seed crops at Ziwani Farm, Taita Taveta County, in Kenya. In addition, 19 technical representatives

from the seed companies were trained in September 2022 on seed production research (SPR) trial management and effective seed crop establishment and management as they visited the TELA Maize Project's transgenic SPR site at Kiboko in Kenya. In addition, a team of 10 staff members from Bayer Seed Company visited the TELA SPR at Kiboko in October 2022 on a learning experience.

In Nigeria, two training sessions on hybrid maize seed production were conducted for seed companies in preparation for TELA seed production. The first was held virtually in June 2022, while the second in-person training was conducted at a farm hosting TEGO SPR trial with 16 seed companies in attendance.

Participants including 19 representatives of 18 seed companies during the training on SPR trials management at Kiboko, Kenya, in September 2022

A team from Bayer during a visit to the TELA Seed Production Research Site in Kiboko in October 2022

Participants from different seed companies during a training on hybrid maize seed production at Pandagric farm, Nasarawa State, Nigeria in September 2022

458

- demonstration fields established in 2022 to drive product promotion

In March 2022, AATF conducted training for 38 agricultural extension officers on various topics on maize crop management, including weed management, soil fertility management, Fall Armyworm (FAW) management, and mechanized services through TAAT Maize Compact. These officers were selected from Niger, Mali, Guinee, Cote d'Ivoire, Cameroon, Burkina Faso, and Benin, where the Program for Integrated Development and Adaptation to Climate Change (PIDACC) is being implemented.

In Nigeria the PBR Cowpea Project held two training sessions in February in Jigawa State, and June in Kano State for seed partners and out-growers on quality seed production and stewardship.

Production of hybrid rice seed is relatively new in Africa and so AATF and partners including ICOSEED, CGA, National Irrigation Authority, and Equity Bank facilitated a training in November 2022 dubbed *Farm to Market* for hybrid rice farmers in Kirinyaga County, Kenya. The focus of the training that was attended by 62 farmers, was to raise awareness on hybrid rice and establish a network to support market entry and growth for the rice producers including men, women, and youth. Following the training, four farmer groups were formed to facilitate collective bargaining for capital and market access, with Equity Bank offering to fund the farmers without collateral. The aim for the training was to ensure that all gender get involved in the rice value chain with greater

access to productive resources (land and capital) that is mostly associated with men only.

Improving production of certified seeds with optimal quality

A proficient system for seed production and distribution to allow products to reach the intended users in a timely manner is a key prerequisite to successful technology transfer efforts in crop value chains.

In 2022, AATF and its seed company partners produced a total of 3,225.7 metric tons (mt) of certified seed. These consisted of 1,090 mt of groundnuts (42 mt in Uganda; 1,048 mt in Malawi); 150 mt of beans in Uganda; 510 mt of soybean in Malawi; 11.7 mt of PBR Cowpea in Nigeria; 1,384 mt of DroughtTEGO in Kenya, South Africa, Tanzania, Uganda, and Zambia; and 80 mt of TELA maize in South Africa. The total quantity of seeds produced was enough to meet the planting needs of 227,750 farmers and adequate to cultivate over 78,600 hectares of farmland.

AATF engaged various seed companies and producers to meet the certified seed demand from farmers. The TELA maize seed was produced in collaboration with MbeuGenes who delivered 80 tons of commercial seeds

PBR Cowpea foundation seed field in Zaria, Nigeria during the rainy season in November 2022

TELA Hybrid seed production field for the WE8206BII variety in South Africa, Nov 2022.

in South Africa. Soybean seed production in Malawi was handled through Pyxus Agriculture Ltd while groundnut seed was produced by Limbelief and Pyxus Agriculture Ltd in Malawi. Certified beans' seed was produced through CEDO, a private seed company in Uganda, while groundnut was produced by two local seed businesses in Uganda- Izula and Akulabula. DroughtTEGO seeds were produced by eight licensed seed companies.

Early Generation Seed (EGS) for soybeans was multiplied on a total of 208 ha of land by both public and private sector partners in Malawi.

Farmer demonstrations, awareness, and education

Through partnerships with seed companies, AATF facilitated the promotion of new products for transgenic and conventional hybrid maize, hybrid rice, and groundnuts by establishing demonstration plots and conducting field days. During the year, AATF and its partners showcased the performance of various products that were ready for introduction to the market and uptake by farmers through a total of 458 product demonstration plots and 62 field days that were attended by 5,433 farmers.

In South Africa, AATF and Mbeu Genes conducted four field days to promote six TELA Bt MON89034 hybrids among farmers. The information days were attended by 211 farmers and five agricultural extension officers.

Table 3: Summary of certified seed produced in 2022

Seed	Project	Country	Quantity of seed produced (MT)
Groundnut	Seeds2B	Uganda	42
Beans	Seeds2B	Uganda	150
Groundnuts	Seeds2B	Malawi	1,048
Soybeans	Seeds2B	Malawi	510
PBR cowpea	PBR cowpea	Nigeria	11.7
DroughtTEGO maize	TELA	Kenya, South Africa, Tanzania, Uganda, and Zambia.	1,384
TELA maize	TELA	South Africa	80
Total			**3,225.7**

In addition, AATF conducted promotional activities for maize hybrids in different countries to foster adoption of new hybrids to enhance productivity and generate demand for foundation seed. A total of 429 demos were established in Kenya, Tanzania, Uganda, Mozambique and Nigeria, while 48 field days were conducted in the same countries. These activities reached a total of 4,576 farmers in the said countries.

In Kenya, 27 farmer-managed demos were conducted in the rice growing regions of Central Kenya (Embu, Kirinyaga and Murunga) and Western Kenya (Migori, Kisumu, Homabay, Busia and Siaya) in 2022. Each demo had four rice hybrids and one commercial inbred variety. Overall, AH18007 hybrid and Pwan Gold Plus hybrid gave the highest yield performance. Hybrid AH18007 recorded significantly ($p < 0.05$) higher yield in both the high performing location of Central Mwea (a region under the irrigated rice growing scheme of Kenya), and the low performing region in Mwea East – under rainfed production. Eight field days were organised to educate farmers on hybrid rice farming. During these events, farmers' socio-economic data was collected, and capacity building activities on rice crop management were conducted alongside the farming demonstrations.

Groundnut field day at Baka, Malawi, in June 2022

PBR cowpea at podding stage in the National Performance trials in Northern Ghana, September, 2022.

In Malawi, AATF and partners carried out two product promotion field days and two demos for groundnuts that were attended by 388 farmers, eight seed companies and nine research institutions.

Table 4: Promotional demonstration plots and field days in 2022

Product	Country	No. of Demos	No. of Field Days
Maize hybrid	Kenya	190	23
Maize hybrid	Tanzania	89	7
Maize hybrid	Uganda	50	0
Maize hybrid	Mozambique	42	15
Maize hybrid	Nigeria	58	3
TELA Maize	South Africa	0	4
Hybrid rice	Kenya	27	8
Ground nuts	Malawi	2	2
Total		**458**	**62**

Training farmers on good agronomic practices and the qualitative characteristics of WE 4102 and WE 7118 in Tanzania

DroughtTEGO hybrid WE4102 promoted by Kinemoagro, Tanzania

Looking forward

Under the new Strategic Plan (2023 -2027), AATF will strengthen market systems to effectively respond to demand and supply of agricultural technologies by placing greater emphasis on catalyzing product commercialisation and scaling for wider reach and increased access by stakeholders. AATF will deploy viable commercialisation models and pursue cost-effective ways of reaching farmers at scale. AATF will also expand its farmer-reach to include those involved in semi-commercialised production system to boost/accelerate technology adoption/uptake This will entail strengthening the capacity of key market players in seed production, agri-business management and product stewardship supported by data generated from market analytics and intelligence.

Table 5: Summary of five-year milestones under strategic objective two

Indicators	Cumulative target	Cumulative five-year achievement	Percentage achieved (%)
Number of farmers directly reached with information on AATF products	403,000	189,229	47
Number of farmers aware of mechanisation activities	1,375,000	825,000	60
Mechanisations operations conducted (ha)	80,000	52,901	66
Number of farmers linked to off- takers	182,000	178,622	98
Seed produced through AATF commercialisation programme (mt).		30,000 mt	

SO2

Strategic objective two, five-year strategy implementation

By the end of the 2018-2022 strategy phase AATF had directly reached over 189,200 farmers with robust information on AATF products. About 95% of these farmers (178,600 farmers) were linked to off takers indicating successful market access for the overwhelming majority. In addition, AATF successfully engaged 12,975 value chain actors including seed companies, agro-dealers, seed producers, grain traders, and processors, in the development of a resilient market system.

Strategic Objective 3:

Create an enabling environment for increased uptake and use of agricultural technologies

The adoption of agricultural technologies largely depends on existence of a functional enabling environment of polices, regulatory institutions, and efficient markets. To this end, AATF works with governments and other partners to raise awareness on emerging technological innovations and advocate for shifting attitudes and perceptions to pave way for enactment and effective implementation of policies, systems, and processes. Additionally, AATF works in collaboration with governments to create facilitative environments that support technology development and adoption. AATF and its partners strive through their advocacy, outreach, policy, and regulatory science functionsto foster a receptive environment for the development, testing, uptake and utilisation of compelling products resulting from science, technology and innovation particularly those pertaining to biotechnology.

STRATEGY MILESTONES

189,229
Number of farmers directly reached with information on AATF products

825,000
Number of farmers aware of mechanisation activities

1,047
- Number of journalists trained in 2022 across all OFAB countries.

Facilitating seed policy reforms

In 2022, the Technologies for African Agricultural Transformation (TAAT) Policy Enabler Compact, coordinated by AATF, sustained implementation of activities aimed at winding up the first phase of the TAAT Programme that was launched in 2017 as a flagship programme supported by the Africa Development Bank (AfDB) towards the realisation of its Feed Africa Strategy goals.

AATF continued its engagement with policy makers and regulators in Malawi to facilitate regulatory reforms in the seed sub-sector. Working with Malawi's Ministry of Agriculture, AATF provided technical and financial support that culminated into the finalisation and adoption of Plant Variety Protection (PVP) Regulations. The regulations will help to operationalise the Plant Breeders Act, which provides substantial incentives for breeding of new varieties in the country.

Participants pose for a group photo during agricultural science communication training for journalists held in Kigali, Rwanda in July 2022.

The work in Malawi complements previous work carried out in other African countries including Democratic Republic of Congo (DRC), Ghana, Mozambique, Nigeria, Rwanda and Tanzania. towards building functional seed system, creating effective variety release and registration mechanisms; spurring market incentives along agricultural value chains; and facilitating access to quality inputs through accreditation of agro-input suppliers.

Accelerating implementation of regionally harmonised regulations

Building on previous efforts, AATF is accelerating the domestication and implementation of regionally harmonised seed regulations in some of Africa's Regional Economic Communities (RECs), with a particular focus on the Economic Community of West African States (ECOWAS) and East African Community (EAC).

In the ECOWAS region, AATF collaborated with the West and Central African Council for Agricultural Research and Development (CORAF) to support activities geared towards the finalisation, validation, and adoption of the ECOWAS Regional Quarantine Pest List.

In the EAC region, AATF supported harmonisation of guidelines and protocols for registration of pesticides through a United States Department of Agriculture's Foreign Agricultural Service (USDA-FAS) funded initiative. This effort sought to fast-track domestication and implementation of harmonised EAC Guidelines on Pesticide Registration to enhance regional registration of pesticides for control of pests. As a result, several pesticide companies are now utilising the recently implemented framework to apply for testing and registration of pesticides which are potentially effective in controlling the Fall Army Worm (FAW). This approach serves to aid agro-chemical companies in the cost-effective registration of their products in addition to facilitating faster access to superior pest control products by farmers in the EAC partner states.

Creating an enabling environment relevant for bioeconomy

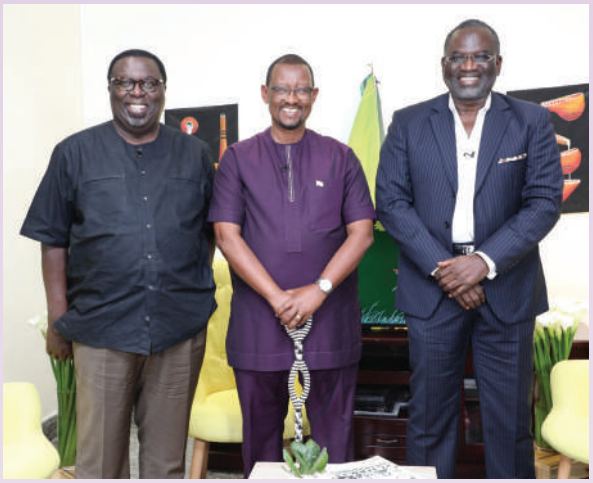
Through the EU-supported Bio4Africa Project, AATF collaborated with a consortium of partners spearheading the development of a bio-based economy in Uganda, Côte d'Ivoire, Ghana, and Senegal. This effort entailed assessment of the policy and regulatory environment governing utilisation of bio-based technologies including the identification of gaps constraining these technologies in the four countries. The gaps identified will inform policy advocacy efforts among decision makers to facilitate and catalyze the commercialisation of select biobased technologies that includes palletising, briquetting, biodigesters, pyrolysis, green biorefinery, and hydrothermal carbonisation (HTC).

Increasing awareness and closing the information gap on agricultural biotechnology

Through the Open Forum for Agricultural Biotechnology (OFAB) Project, AATF trained 1047 journalists across the continent in efforts to strengthen the capacity of media to report accurately on biotechnology to help address misinformation on biotechnology especially genetically modified organisms (GMOs). The training provided participants with new knowledge and skills in understanding the basics of science reporting, solution journalism, audience mapping , writing technique and other methodologies to report on agricultural biotechnology in an effective and captivating manner. Key areas of interest for journalists included challenges in science witing and story development, solutions journalism, knowing your audience, and debunking myths and fake news. The trainings, held in March 2022 in Malawi and Mozambique, and in June 2022 in Rwanda, opened opportunities for scientists to engage with journalists. In Kenya alone, 70 scientists got media appearance opportunities that helped them to provide correct information on the necessities for biotechnology to address misconceptions and misinformation following the Government of Kenya's decision to lift the ban on imports of GMOs.

AATF also facilitated and utilised various platforms to enhance dialogue on agri-biotech research, development, deployment, policies, and regulations and related issues. These included policy dialogue meetings, media competition, media cafés, workshops, study tours, and biotech seeing-is-believing and eating-is-believing field study visits.

A key development during the year was the launch of AATF's inaugural science, technology and innovation (STI) series of conversations, *KIKAO*, which means 'seating' or 'gathering' in Kiswahili, in August 2022. Hosted by the AATF Executive Director, *KIKAO* sheds light on significant advancements in African agriculture and examines issues of concern regarding the continent's agricultural transformation



L-R: Dr. Denis Rangi, CABI Director General, Development, Dr. Canisius Kanangire, AATF Executive Director,, and Dr. Ousmane Badiane, immediate former AATF Board Chair and the Founder and Executive Chairperson of AKADEMIYA2063, , pose for a photo after a KIKAO shooting.

progress, as well as necessary actions that need to be taken. The programme is designed to foster extensive discussions on science, technology, and agriculture. By close of the year, *KIKAO* had recorded 19 episodes, covering various topics such as demystifying GMOs, how agriculture can transform Africa, investment in Africa's agriculture, food systems and the policy agenda, youth in agriculture and quality seed production among others.

The OFAB Media Awards (OMAs) 2022 were held in Nigeria in December, where Emmanuel Ntireng'anya from Rwanda

Rita Okwanihe (Nigeria), winner under the radio category, Emmanuel Ntireng'anya (Rwanda), overall Africa winner, and Dorcas Bello (Nigeria), winner under television category, during the OMAs event held in Nigeria.

emerged as the overall Africa winner for his story on *"How agricultural biotechnology could boost food security in Rwanda"*. He was also the winner under print and online categories. Other winners were Rita Okwanihe, from Nigeria under the Radio category, and Dorcas Bello from Nigeria under the television category. The Awards, in its 8th year, aims at encouraging excellence in science reporting and celebrating the vital contributions of journalists in fostering productive discussions on agricultural biotechnology through responsible, professional, and ethical reporting.

In March 2022, AATF had expanded its biotech outreach footprint into two additional countries through the launch of OFAB Chapters in Malawi and Mozambique. This brings to ten the countries that host OFAB Chapters on the continent with expanded opportunities for biotech conversations in southern Africa.

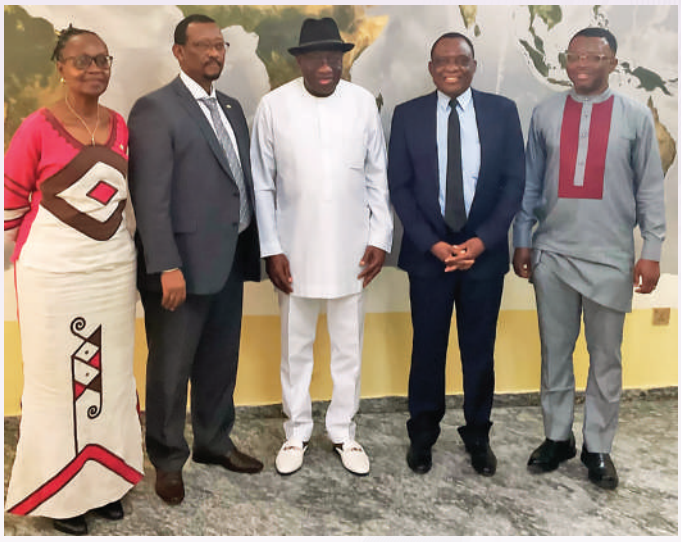
High level policy engagement on biotechnology

In December 2022, Dr. Goodluck Jonathan, the former President of Nigeria, accepted AATF's request to serve as Africa's Agricultural Technology Ambassador. In this capacity, Dr. Jonathan will promote the progress of Africa's agricultural objectives and economic growth through advocating for the implementation of cutting-edge technologies and increased investment in agriculture. Dr. Goodluck, also a scientist, will be key in enhancing high level and regional policy outreach in support of STI.

Another key development in the enabling environment for the deployment and adoption of biotech crops in Kenya was the government's October 2022 decision to lift the ten-year ban on importation of GMOs that had stifled progress in getting Genetically Modified (GM) products to market. The pronouncement provided a clear roadmap towards commercialising Bt TELA maize and other GM products in the country, and points to a positive and receptive political

Delegates at the inaugural OFAB-Rwanda Media Awards function held in Kigali, Rwanda in October 2022.

L-R: Dr. Canisius Kanangire,AATF Executive Director, Dr. Chomora Mikeka, Director Department of Science and Technology, Ministry of Education, Malawi, and Prof. Elijah Wanda, former Director General of the National Commission of Science and Technology, Malawi, during a panel discussion at the launch of OFAB Malawi Chapter in April 2022, in Lilongwe, Malawi.



L-R: Nancy Muchiri, Senior Manager, Communication and Partnerships Unit; Dr. Canisius Kanangire, AATF Executive Director; Dr. Goodluck Jonathan, former President of Nigeria; Prof. Emmanuel Ikani; Executive Director, National Agricultural Extension Research and Liaison Services and Dr. Francis Onyekachi, Product Stewardship Manager

leadership. Accordingly, AATF seized the new momentum created by this development to intensely engage and work with biotech stakeholders in the country including government ministries and institutions, policymakers, academics, farmers, media, and professional bodies such as the Kenya Private Sector Alliance (KEPSA) to build confidence among Kenyans on GM technology.

At the regional level, AATF held discussions with the African Union Development Agency (AUDA-NEPAD regarding partnership arrangements aimed at advancing the Science, Technology, and Innovation (STI) commitments of Agenda 2063, the continental long-term development framework. The discussions emphasized the importance of co-ownership of the African STI narrative to ensure that it accurately reflects the realities, aspirations, and priorities of the continent, its regions, and its nations. The AATF Executive Director held strategic engagements with the then Chief Executive Officer (CEO) of AUDA-NEPAD, Dr. Ibrahim Mayaki, on how to move the STI agenda in Africa forward for good pace and impact. In this regard therefore, AATF collaborated with the Agency and the Government of Rwanda to host the 2nd Africa-Wide Science, Technology, and Innovation Conference that attracted over 200 participants including regional STI Ministers and key Regional Economic Communities. The Conference recommended increased investment in STI to achieve Africa's agriculture vision, as outlined in the Malabo Declaration and Agenda 2063. The Ministers emphasized and reiterated the importance of securing political will for the implementation of STI policies and programmes that have been agreed upon by African Union member states.

Dr. Canisius Kanangire, AATF Executive Director, presenting AATF souvenirs to Dr Ibrahim Mayaki, the former Chief Executive Officer (CEO) of AUDA-NEPAD, during a courtesy meeting in Pretoria, South Africa, in March 2022.

During the STI Conference, AATF organised a high-level engagement session with Director Generals of National Agricultural Research (NARs) from Burkina Faso, Mozambique, Rwanda, and Uganda. The NARs CEOs urged African countries, the regional economic communities, and key continental organisations such as the African Union (AU), African Development Bank (AfDB), and the United Nations Economic Commission for Africa (UNECA) to give top priority to STI in their socio-economic development frameworks.

10

– Number of biotech champions recognised for promoting science and biotechnology in Africa.

Some of the participants during the opening ceremony for the 2nd Africa-Wide Science, Technology, and Innovation (STI) Conference held in April 2022 in Kigali, Rwanda

AATF further organised a Ministerial roundtable that brought together the Ministers of Agriculture and the Ministers of Science, Technology, and Innovation from Rwanda, Burkina Faso, and Malawi. The ministers produced a communiqué on their commitment to adapt and adopt relevant technologies, including biotechnology and emerging technologies, to strengthen food systems, enhance resilience, and transform African agriculture. The communique further identified pathways that could be explored to increase investment in STI to boost integration of technology in the agricultural sector.

At the country level, AATF intervened to address a major threat to the progress and advances made in the biotech enabling environment of Nigeria. A proposal by a member of the Senate to amend the National Biosafety Management Agency (NBMA) Act would have introduced strict liability clauses that would have been a severe drawback to biotechnology development in the country if successful. AATF therefore coordinated an Africa-wide Response System to support efforts by agriculture biotech national stakeholders in Nigeria to respond to that proposal. A public hearing on the Senate proposal concluded there was no need for the amendment to the law that had successfully facilitated the development and release processes of key transgenic crops in the country including Bt cotton and Pod Borer Resistant (PBR) cowpea.

AATF supported a consultative process that is geared at facilitating the development of a biosafety framework for Zanzibar. The process will foster intense biosafety discussion that should catalyze decision making to guide biosafety regulations in the country. OFAB is also following up with the Government of Tanzania on its promise to review its biosafety regulations to enhance international cooperation and unlock investment in the biotech sector. OFAB and its partners will be availing its support to both mainland Tanzania and Zanzibar to move forward their biotech agenda.

Recognition of Biotech Champions

AATF launched a program to recognize individuals who have shown exceptional dedication to promoting science and biotechnology as fundamental drivers of

agricultural development and growth in Africa. In 2022, ten biotech champions, including H.E. Jakaya Mrisho Kikwete, the former president of Tanzania, were recognised during the OFAB Day celebrations held in Accra, Ghana in September. The annual program will be organised by each OFAB Country Chapter and will recognize individuals who have are deemed to have significantly contributed to the progression of STI especially in biotech on the continent.

Looking forward

AATF intends to enhance its efforts in raising public awareness on agricultural innovations by educating and engaging decision-makers, regulators, journalists, legal professionals, farmers and consumers.

In the new strategy, AATF will continue to provide technical support to address policy and regulatory gaps that hinder technology transfer and marketing of agro-inputs and agricultural commodities at national and regional levels. AATF hopes to l expand its partnerships and networks with countries and partners to support the development and implementation of enabling legal frameworks that will guide the governance, registration, release, and commercialisation of innovative technologies. AATF will equally strengthen its partnerships with the Media through the national media councils in each OFAB country to enhance the impact of its mission. Action will be proposed to liaise with regional think-tanks and networks that have been identified as strategic for advocacy and influencing, in Africa.

Table 6: Summary of five-year milestones under strategic objective three

Indicators	Cumulative Target	Cumulative five-year Achievement	Percent achieved (%)
Governments engaged on policy deliberations	20	16	80
Stakeholders reached through advocacy and outreach efforts	16 M	47.3M	285

SO3

Strategic objective three, five-year strategy implementation

Over the five-year period (2018 2023), AATF's advocacy, outreach, and regulatory interventions had a positive impact on 47.3 million stakeholders who were reached through a series of engagements undertaken to support the multifarious technologies offered on AATF product portfolio. Through AATF's activities, 16 governments in the regions of COMESA SADC, ECOWAS and EAC were engaged on policy discussions to create a functional enabling environment that supports development, deployment, and adoption of agricultural technologies. With key transgenic food crops gradually entering mainstream markets and with more in the pipeline, Africa is favorably becoming more receptive to innovative science technologies. This is likely to rapidly expedite agricultural transformation processes towards the development of resilient food systems for Africa.


TSAVO SEED
WE 4141
HYBRID
SEED MAIZE
2KG

Financial Report 2022

These AATF separate audited annual financial statements cover the period January 2022 to December 2022 and provide comparative data for the prior accounting period, 2021.

Funding overview

The Foundation's funding for the year 2022 was provided by the United States Agency for International Development (USAID), Bill and Melinda Gates Foundation (BMGF), Syngenta Foundation for Sustainable Agriculture (SFSA), International Institute of Tropical Agriculture (IITA) as a Lead Grantee of the African Development Bank (AfDB), SNV Netherlands and the European Commission through the European Research Executive Agency (REA),Commonwealth for Scientific and Industrial Research Organisation(CSIRO) and Global Centre on Adaptation (GCA).

Over the last five years, the major funding for AATF activities has come from private sources (foundations) who contributed 63 percent of the total grant income during the period. As a public Charity, AATF has maintained its funding within the allowable threshold having received 37 percent of its total funds from public sources (government agencies, multilateral donors, and international institutions) over the five-year period. Below is the outlook of AATF's funding for the period 2018 to 2022.

Source of funding: 2018-2022 (US$)

	2022	2021	2020	2019	2018	Total
Public Funding						
Funding from government agencies	2,387,516	3,410,556	4,655,846	6,057,928	5,081,842	21,593,688
Funding from multilateral donors	186,431	357,248	893,772	1,429,823	807,578	3,674,852
Funding from international development organizations, non-profit organizations (NPOs) and public foundations	444,287	127,168	129,843	223,137	408,778	1,333,213
Total funding from public sources	**3,018,234**	**3,894,972**	**5,679,461**	**7,710,888**	**6,298,198**	**26,601,753**
Private Funding						
Funding from private foundations	8,553,217	8,922,814	8,392,592	10,711,134	9,072,877	45,652,634
Funding from other private institutions		-	-	-	-	-
Total funding from public sources	**8,553,217**	**8,922,814**	**8,392,592**	**10,711,134**	**9,072,877**	**45,652,634**
Total funding	**11,571,451**	**12,817,786**	**14,072,053**	**18,422,022**	**15,371,075**	**72,254,387**

AATF is grateful to all its investors for their continued support that ensures that its commitment of assisting resource-constrained farmers to access affordable agricultural technology hence improved livelihoods is achieved.

Statement of financial position as at 31 December 2022 (US$)

	2022	2021
ASSETS		
Non-current assets		
Property, plant and equipment	230,089	227,983
Right-of-use assets	720,922	839,352
Intangible assets	-	-
Investments in subsidiaries	1,182,479	1,125,248
Loans to group companies	687,224	567,726
	2,820,715	**2,760,309**
Current assets		
Trade and other receivables	1,234,255	1,268,467
Contribution receivable	329,694	1,225,449
Cash and cash equivalent	16,597,941	19,042,589
	18,161891	**21,536,505**
Total assets	**20,982,606**	**24,296,814**
Equity and Liabilities		
Equity	**10,638,933**	**10,525,966**
Non-current liabilities		
Lease liabilities	**770,209**	**876,353**
Current liabilities		
Payables and accruals	1,128,222	1,165,207
Lease liabilities	106,144	94,198
Deferred income	112,591	184,402
Unexpended grants payable	8,226,504	11,450,688
	9,573,461	**12,894,495**
Total equity and liabilities	**20,982,603**	**24,296,814**

Statement of profit or loss and other comprehensive income for the year ended 31 December 2022: Abridged version (US$)

	2022	2021
Income		
Grant income	11,571,451	12,817,786
Other income and gains	1,934,955	1,840,462
Deferred income	71,811	122,652
	13,578,217	**14,780,900**
Expenditure		
Project related expenses	11,668,687	11,923,050
Management and general expenses	1,796,563	2,330,096
	13,465,250	**14,253,146**
Net surplus for the period	**527,754**	**527,754**
Percentage of project related expenses operating expenses	83.65%	83.65%
Proportion of management and general expenses	16.35%	16.35%

Statement of cash flows for the year ended 31 December 2022: Abridged version (US$)

	2022	2021
Net cash provided by operating activities	364,591	86,630
Net cash (used in) investing activities	(279,259)	(199,863)
Net cash provided by financing activities	(2,529,979)	2,002,575
Total cash & cash equivalents movement for the year	**(2,444,647)**	**1,889,342**
Cash and cash equivalents at the beginning of the year	**19,042,589**	**17,153,247**
Total cash and cash equivalents at end of the year	**16,597,941**	**19,042,589**

Financial review

The funding received in the reporting period was adequate for the Foundation's needs. All expenditures were fully covered leading to net surpluses of $112,958 and $527,754 in the current and the prior year respectively. This represented a decrease of 78.59 percent from the net surplus of the prior year. The decrease was primarily due to reduction in grant inflows during the year due to some projects coming to an end such as the Nitrogen Efficient Water Efficient Salt Tolerant (NEWEST) Rice Project and the Partnerships for Seed Technology Transfer in Africa (PASTTA) project. In addition, there was a delay in kick off of TAAT II project.Equally, there was a marginal decrease of $1,246,335 in restricted income down from $12,817,787 in 2021 to $11,571,451 in the current period, translating to an decrease of 9.7 percent. Even though the net surplus decreased by 78.60 percent, the financial health of the organisation is sound given the steady growth in its equity and reserves levels. AATF continued with its prudent management of unrestricted (core) funds and enhanced project costing which ensured that all costs that are attributable to projects were duly allocated to restricted grants.

AATF's revenue decreased marginally by 8.01 percent from $14,780,900 in the prior year to $13,578,217 for the year ended 31 December 2022. This was majorly due to the reduced disbursements from donor and closure of NEWEST project and end of funding for Hybrid Rice Project. Similarly, overhead income decreased by 10,43 percent from $1,196,436 in 2021 to $1,071,659 in 2022. Other operating income, which is largely contributed by investments in fixed deposits, increased to $861,934 from $644,026 leading to a 33.84 percent rise as compared to the previous year. The increase is attributed to growth in fixed deposit amounts that resulted in increased interest earning. Included in the total amount is the International Society for Tropical Root Crops (ISTRC) conference fees of US$ 185,549 that is matched against expenses incurred for the same event.

The Foundation's cash flows from operating activities increased from $86,630 in the prior year to $364,591 for the year ended 31 December 2022. Cash flows used in investing activities reduced marginally by $79,396 whereas cash flows from financing activities decreased significantly by $4,532,554 as compared to the previous period. We received less amounts of grant disbursements from donors leading to an overall decrease of $2,444,647 in total cash flows. Overall, the cash flow position of AATF is strong with cash and cash equivalents amounting to $16,597,941, up from $19,042,589 in the prior year.

The future outlook of the Foundation is favourable with its main traditional donors continuing to support it. AATF has indications and opportunities of getting new funding from both the existing and potential donors.

Board of Trustees 2022

Ousamane Badiane

AATF Board Chairperson until November 2022

Aggrey Ambali

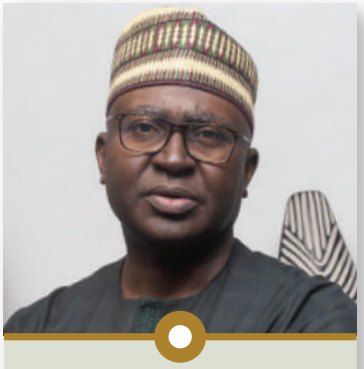
AATF Board Chairperson since November 2022

Dahlia Garwe

Vice-Chairperson

Maggie Gill

Board Member



Muhammadou M.O. Kah

Board Member

Bernard Slippers

Board Member

Hamadi Boga

Kenya Government Representative

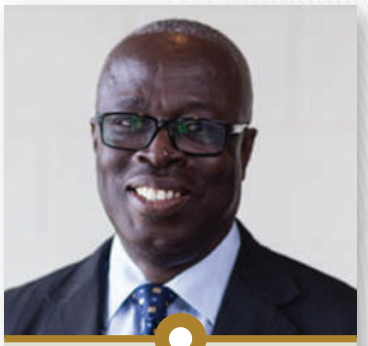
Board of Trustees 2022

Sylvia Horemans
Board Member

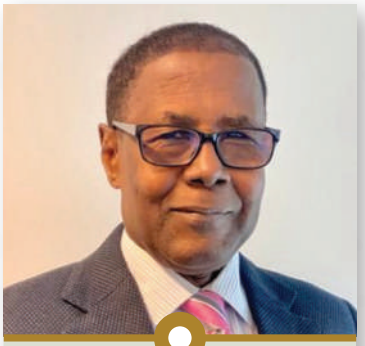
Shey R. Tata
Board Member

Ingrid Wünning Tschol
Board member

Garba Hamidu Sharubutu
Board Member



George Agyemang Sarpong
Board Member



Djimé Adoum
Board Member

Canisius Kanangire
AATF Executive Director

AATF Staff 2022

No.	Employee's Name	Position	Location
1	Abed Kagundu	Program Officer - Regulatory Affairs	Nairobi
2	Alex Abutu	Communications Officer - West and Central Africa	Abuja
3	Alhaji Tejan-Cole	Director of Legal Affairs/Legal Counsel	Nairobi
4	Amos Kimebur	Head of Finance	Nairobi
5	Bernard Ehirim	Program Officer - Stewardship	Abuja
6	Caleb Obunyali	Program Officer - TELA	Nairobi
7	Canisius Kanangire	Executive Director	Nairobi
8	CarolineThande	Administrative Assistant - TELA	Nairobi
9	Cecilia Limera	Program Officer - Programme Development and Commercialisation	Nairobi
10	Daniel Willy	Program Officer - TAAT Policy	Nairobi
11	David Tarus	Seeds2B Coordinator	Nairobi
12	Dorothy Onyango	Program Officer - Rice	Nairobi
13	Emmanuel Okogbenin	Director, Programme Development and Commercialisation	Nairobi
14	Erasmus Mwangi	Budgets & Grants Management Officer	Nairobi
15	Fatuma Wario	Administrative Assistant/Events Cordinator	Nairobi
16	Francis Nang'ayo	Senior Manager - Policy and Regulatory Affairs	Nairobi
17	Francis Nwankwo	Product Stewardship Manager	Nairobi
18	Fredah Nyaga	Finance and Procurement Officer	Nairobi
19	Gabriel Macharia	Data Management Officer	Nairobi
20	George Achia	Communications Officer - East and South Africa	Nairobi
21	George Marechera	Agribusiness Development Manager	Nairobi
22	Gordon Oduor Ogutu	Protocol Assistant	Nairobi
23	Grace Mukasa	Resource Mobilisation Officer	Nairobi
24	Howard Okiror	Legal Officer	Nairobi
25	Ijeoma Akaogu	Program Officer - Cowpea	Abuja
26	Jacquine Kinyua	Executive Officer	Nairobi
27	James Watiti	Regional Advocacy Coordinator	Nairobi
28	Jane Achando	Legal Officer	Nairobi

AATF Staff 2022

No.	Employee's Name	Position	Location
29	Jean Baptiste	Project Manager - Cowpea	Abuja
30	Joanne Muthie	Digital Communications Officer	Nairobi
31	Jonga Munyaradzi	Seed Production Manager	Nairobi
32	Josephine Mailu	Head of Human Resources	Nairobi
33	Joyce Njuguna	Monitoring and Evaluation Officer	Nairobi
34	Kehinde Jimoh	Program Officer - Seed Systems and Agribusiness	Abuja
35	Kennedy Boiyo	Accountant	Nairobi
36	Love Adegbola	Administrative Assistant	Abuja
37	Luiz Silva	Transgenic Seed Expert	Nairobi
38	Mary Asorit	Accountant	Nairobi
39	Millicent Sedi	Program Officer - Agribusiness Development	Nairobi
40	Monica Ndoria	Regional Advocacy Coordinator	Nairobi
41	Moses Taiwo	Program Officer - Seed Systems	Abuja
42	Nancy Muchiri	Senior Manager, Communications and Partnerships	Nairobi
43	Paul Owolabi	Finance and Administrative Officer	Abuja
44	Peter Mugambi	Director Corporate Services	Nairobi
45	Ruth Rotich	Monitoring and Evaluation Officer	Nairobi
46	Sanni Kayode	Project Manager - Rice	Nairobi
47	Simeon Eze	Driver	Abuja
48	Sofia Tesfazion	Director Resource Mobilisation	Nairobi
49	Stephen Wafula	Driver	Nairobi
50	Sylvester Oikeh	Project Manager – TELA	Nairobi
51	Verenardo Meeme	Program Officer – OFAB	Nairobi
52	Vitumbiko Chinoko	Project Manager – OFAB	Nairobi

Funding Partners

Partners

AATF
PROSPERITY THROUGH TECHNOLOGY

AATF HEADQUARTERS
Naivasha Rd, Nairobi
P.O. Box 30709 - 00100, Nairobi, Kenya
Tel: +254 (0)20 422 3700

aatf@aatf-africa.org www.aatf-africa.org aatfafrica @aatfafrica