ANNUAL REPORT 2021

AATF
PROSPERITY THROUGH TECHNOLOGY

Championing Agricultural Technology Transfer in Africa


FAIDA SEEDS
FAIDA SEEDS
FAIDA SEEDS
FAIDA SEEDS
FAIDA SEEDS
FAIDA SEEDS

Championing agricultural technology transfer in Africa

Annual Report
2021

Nairobi, Kenya

AATF (2022). Championing agricultural technology transfer in Africa. Annual Report 2021. Nairobi, Kenya: AATF

ISSN: 1817-5813

Editors: Nancy Muchiri, Emmanuel Okogbenin and George Achia

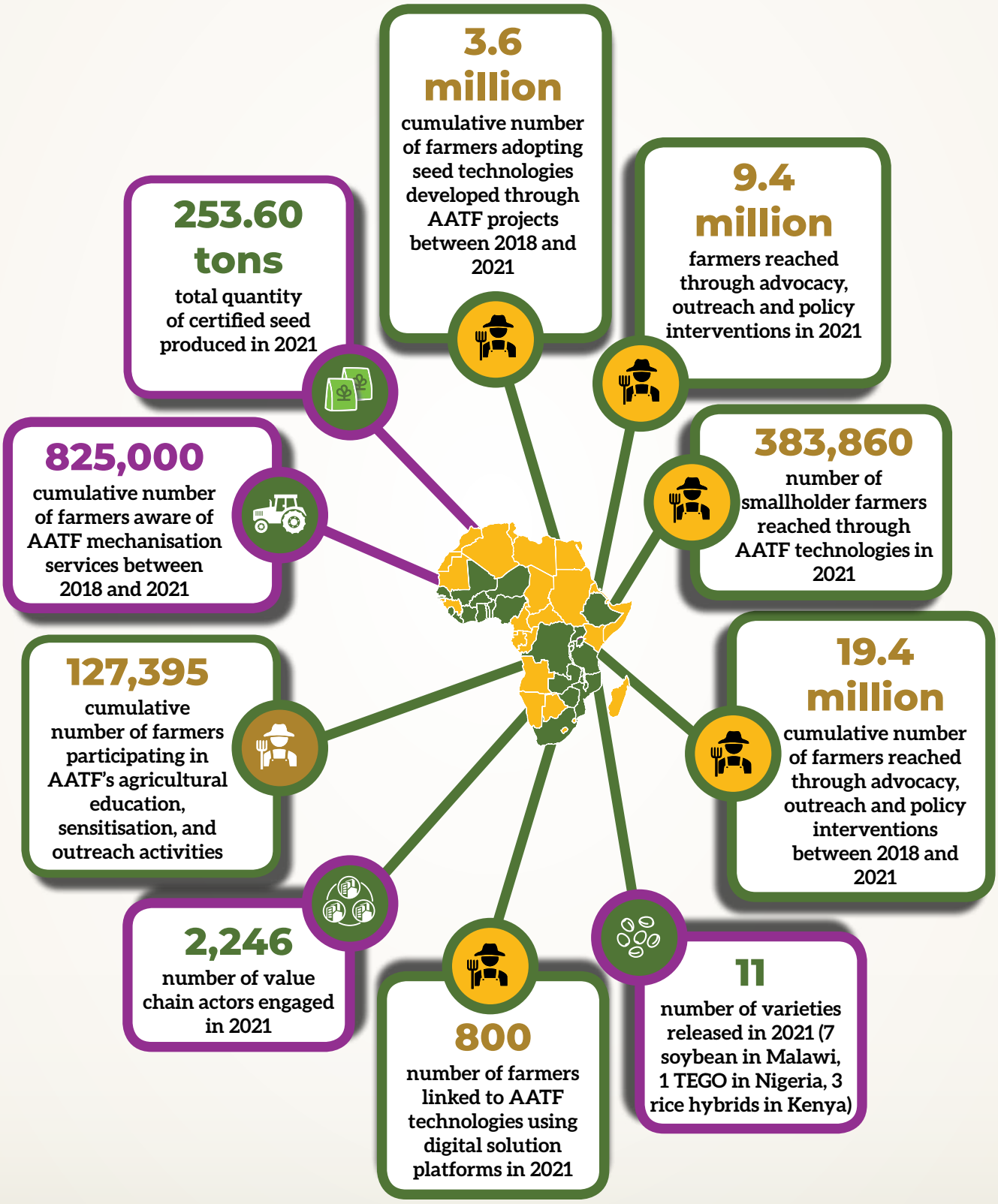
Design theme concept: Nancy Muchiri and George Achia

Design and layout: The Regal Press (K) Ltd

Printing: The Regal Press (K) Ltd

Table of Contents

2021 achievements at a glance



Who we are

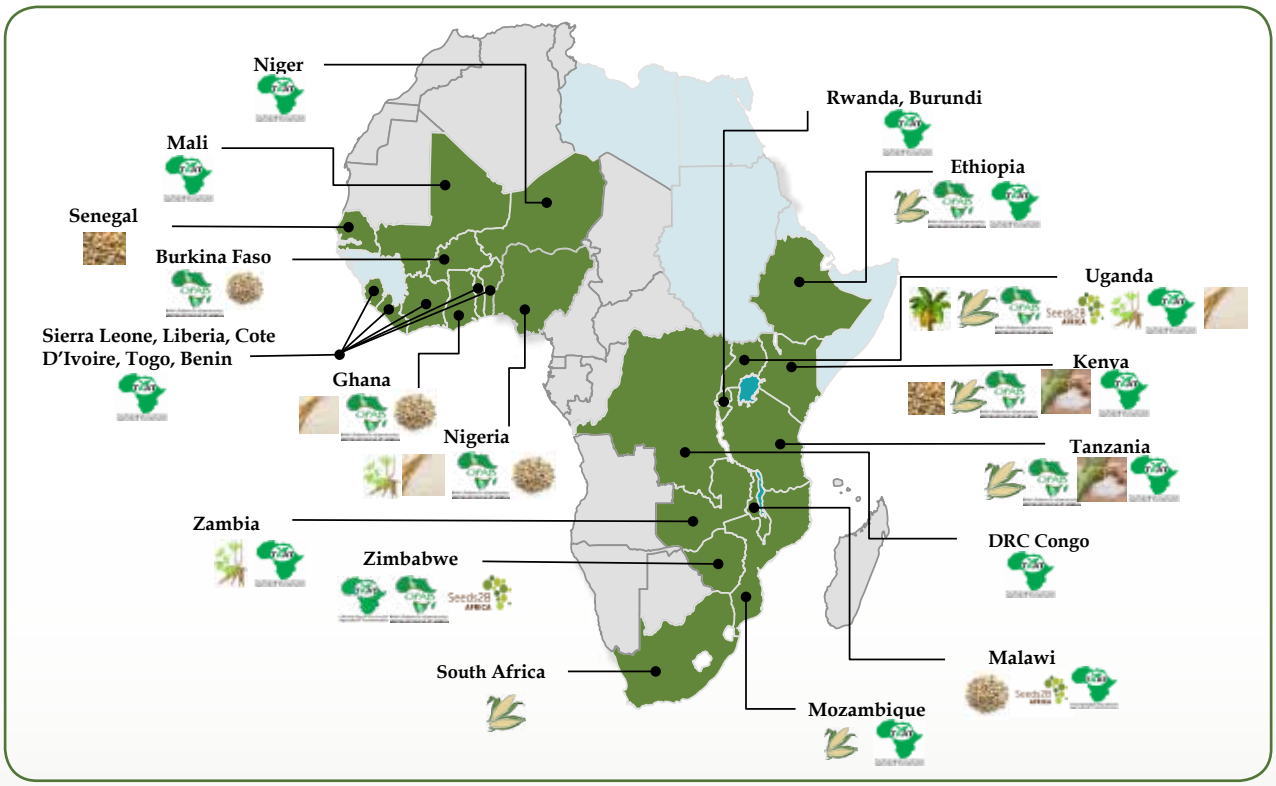
AATF is driven by the vision of a prosperous and food secure Africa, where the livelihoods of smallholder farmers are transformed by innovation. Founded in 2003, AATF believes that the agricultural sector is the foundation of Africa's economic growth and development.

It works towards an Africa where women, men and young farmers have rapid access to state-of-the-art agricultural technologies to help them achieve the desired agricultural transformation that promises food and nutrition security and increased income benefiting all.

The organisation works with its partners to clearly define the real needs of smallholder farmers in Africa, and to identify opportunities to address those needs through the transfer and use of new and existing technologies. It works with public and private sector partners to develop, adapt and commercialize appropriate technologies for smallholder farmers and collaborates with private sector organisations to create sustainable markets.

AATF focuses on the most important crops for smallholder farmers, including maize, cowpea, banana, rice, potato and cassava to improve food security at the household and national levels, and to drive improvements in incomes and livelihoods for farmers.

AATF currently has operations in 23 African countries conducted by a staff of 51 based in the organisation's headquarters in Nairobi, Kenya, country office in Abuja, Nigeria, and in field offices around the continent.



Message from the Board Chairperson

Dr. Ousmane Badiane
Board of Trustees Chairperson

The 2022 Russian invasion of Ukraine comes at a time of unprecedented humanitarian needs, as the global community is grappling with increasing climate shocks, conflicts, the COVID-19 pandemic, and the rising cost of living, all of which are threatening livelihoods of hundreds of millions of poor and vulnerable people around the world. The Ukraine-Russia conflict has significant impacts on food import-dependent countries, including many African countries, that are still recovering from the after-effects of the pandemic.

The conflict has impacted food trade and disrupted its supply chains. This has plunged global food and energy markets into turmoil including inflating the already high food prices. Both countries are critical players in global wheat and maize markets, being among the top five exporters. Together, the two countries supply 30 per cent of wheat and 20 per cent of maize to global markets. In addition, Russia and Ukraine are key exporters of sunflower and barley, accounting for more than three-quarters and one-third of supplies to international markets, respectively. The conflict is affecting movement of food products within Ukraine and exports to its major trading partners. Given the dependency on food imports, many African countries are witnessing gaps created by the disruptions in supply activities.

The reopening of economies following the COVID-19 lockdowns created a sudden increase in demand for basic commodities and fuel even as producers sought to restore their pre-COVID production levels. This was happening at the backdrop of global supplies that had shrunk substantially during the pandemic period and could not adjust in the short run to meet the growing demand. The demand and supply shifts have caused an increase in prices of most basic commodities. Prices have skyrocketed across the world with negative impacts on access to healthy nutritious food being felt across villages in Africa especially among the most vulnerable communities.

> ***Over the years, AATF has recognised and embraced nutrition-sensitive agriculture through interventions that go beyond the conventional idea of increasing yields and incomes of smallholder farmers as a means of enhancing their livelihoods.***

The role of nutrition is one important livelihood driver that can't be discounted even as the world contends with the impact of setbacks brought about by the global pandemic and conflict-related shocks.

According to the 2021 United Nation Food and Agriculture Organisation (FAO) Report on the State of Food Security and Nutrition in the World, about 10.7 percent (815 million) of the 7.6 billion people were suffering from chronic undernourishment globally, with Africa accounting for 25 per cent of this. The fact that malnutrition continues to be experienced in countries that apparently have adequate food supplies, highlights the need for a new approach to achieving improved food security.

In recent years, agricultural and nutrition experts have acknowledged the need for nutrition-sensitive interventions to improve food access and attain global nutrition targets. One approach is the concept of nutrition-sensitive agriculture - a food-based approach to agricultural development that puts nutritionally rich foods and dietary diversity at the heart of overcoming undernutrition, overnutrition and micronutrient deficiencies. It entails going beyond the production and provision of a healthy diet along the food chain to adopting approaches that recognise and cater to specific vulnerable groups within

communities that suffer most from insufficient availability of, and access to nutritious food.

The African Union declared 2022 the year of nutrition and food security. Its commitment to nutrition is reflected in the growing number of initiatives to support countries in integrating nutrition interventions into their agricultural investment plans, as illustrated by the Malabo Declaration and the Comprehensive Africa Agriculture Development Programme. Countries like Nigeria and Ethiopia, for example, have recently developed nutrition-sensitive agricultural plans, a clear manifestation of the greater political priority being given to improving the impact of investments in nutrition in the sector. Globally, the need for agriculture to support better nutrition and health has been recognised and was reflected in the discussions leading up to the United Nations 2030 Agenda for Sustainable Development.

Over the years, AATF has recognised and embraced nutrition-sensitive agriculture through interventions that go beyond the conventional idea of increasing yields and incomes of smallholder farmers as a means of enhancing their livelihoods. We have deliberately incorporated specific nutrition objectives and actions in the design and implementation of our agriculture interventions. We made Nutrition, Food Quality and Post-Harvest Management one of our impact areas as outlined in the current 2018-2022 Corporate Strategy.

We have built on this by developing the AATF Nutrition Sensitive Agriculture Strategy (2022-2027) that is designed to enable the organisation to achieve four key objectives: i) increase the production and consumption of diverse, safe, and nutrient dense foods by smallholder farmers; ii) accelerate adoption of Nutrition-Sensitive Agriculture through awareness creation using social behaviour change communication along the agricultural value chains that AATF promotes; iii) create an enabling environment for food markets to enable accessibility of nutritious foods by smallholder farmer households in regions that AATF operates; and iv) increase women and youth involvement in nutrition-sensitive agriculture activities in those regions.

AATF will access and deploy technologies that target women and youth in the regions it operates, to encourage their involvement in income generating activities. Women will be trained on how to utilize this income by accessing both food and non-food items for improved nutrition in the household. AATF will access time saving technologies targeting women, which will give them extra time that can be used for childcare, food preparation, and to practice good hygiene. All these will ensure that women and youth have equitable opportunity to participate in activities that lead to increased nutrition outcomes.

AATF conducted a survey looking at how mechanisation which reduces workload and duration spent undertaking farming activities, can help farmers utilise the time saved on activities such as child and maternal care, sourcing for nutritious food from the market and how these lead to improved nutrition status in the household.

Further, AATF is contributing to a nutrition secure Africa through its seed-based technologies. For example, through development and dissemination of improved cowpea seeds that are resistant to the destructive pod borer *Maruca Vitrata,* farmers not only benefit from increased yields, but they also harvest clean protein rich beans. This means that the production of cowpea will help improve nutrition status at the household level and support generation of additional income which can be used to buy other nutritious foods or to access non-food items such as health care services.

In recognition that nutrition-sensitive agriculture requires a multisectoral approach, we will leverage on our expertise at AATF to forge public private partnerships that are necessary for the successful mobilisation of resources and implementation of our strategy. We will continue to strengthen capacities, benchmarking with others and doing what we need to do to ensure we are moving the food and nutrition agenda forward.

As I end my term as Chair to the AATF Board of Trustees, I cannot be prouder of the achievements of the Foundation in moving the technology boundaries in Africa's agriculture. I congratulate management and staff for the excellent work that is being done on the ground to ensure Africa and its farmers have access to and gainfully harness tomorrow's technologies for a more prosperous continent.

I wish to recognise the support accorded to me by staff, partners, Board of Trustees, investors, and other professionals during my tenure in our pursuit to deliver innovative agricultural technologies to our farmers. I believe that through the determination and teamwork, 2022 will be a great year and that the future will be brighter for Africa's farmers as new technologies get into their hands.

Message from the Executive Director

Dr. Canisius Kanangire
Executive Director

The year 2021 begun with the pervading uncertainty of a new wave of the COVID-19 pandemic. As an institution, despite the pandemic challenges, we registered positive progress that brings strategic difference to the agricultural sector in Africa by remaining committed to our promise of transforming livelihoods of smallholder farmers in Sub-Saharan Africa (SSA) using innovative agricultural technologies to improve incomes, health, food, and nutrition security.

As the AATF 2018-2022 Strategy enters its final year of implementation, we are elated at what the current results reveal and portend for the organisation's ability to make a difference to the continent's agriculture. We also acknowledge several lessons that will inform our way forward as we enter a new phase of another strategy. With a record performance rating of 72 per cent milestones implemented despite the difficult circumstances created by the pandemic, we are encouraged by these positive achievements with regards to the organisation's ability to expand not only its footprint in Africa but also its scope of focus that now encompasses other emerging technologies and problem-solving mechanisms such as the foundation seed initiatives.

The current Strategy is driven by three overarching strategic objectives including: i) To diversify agricultural technologies accessed for use in SSA; ii) To accelerate commercialisation of agricultural technologies for improved farmer livelihoods; and iii) To create an enabling environment for increased uptake and use of agricultural technologies.

We have increased the integration of digital technologies in AATF operations that will improve technology delivery with enhanced efficiency for unique functions such as field monitoring and provision of technical advise to farmers.

At the onset of the Strategy, we committed to reach 16 million farmers and, by close of 2021, we had reached over 20 million farmers, surpassing the five-year target. With over 4 million farmers having tried and accessed our seed-based technologies, expectation is that the number will increase given the encouraging farmer testimonials on the value addition and life impacting experiences with regards to products from our partnerships. We reached an additional 19.4 million people through advocacy, outreach, and regulatory interventions that imparted knowledge, understanding and various forms of capacity strengthening to facilitate the growth of an enabling environment for innovative technologies.

A key outstanding milestone in 2021 was the registration and launch of ECOBasic Seed Company Ltd (ECOBasic) in Nigeria in November to address the challenge of availability of quality seed for farmers and production of early generation/foundation seed for seed companies. ECOBasic will focus on West Africa as QualiBasic (QBS) continues to service the East and Southern Africa markets. With these two subsidiary entities, we expect to witness an increase in access and use of certified seed by farmers and to ease the production of quality seed by companies.

The Pod Borer Resistant (PBR) cowpea that was granted environmental release in December 2019 by the Federal Government of Nigeria is finally being cultivated by farmers following its commercial launch

in June 2021. As the first transgenic cowpea in Nigeria, the PBR Cowpea story is a global historical development that will make a positive impact on our continent.

We witnessed the third environmental release of TELA maize on the continent when the Federal Government of Nigeria granted its approval through the National Biosafety Management Agency in October 2021. The Government of Nigeria recognised the potential that the technology offers and has committed to working with the TELA Maize Project to get it to farmers. TELA maize is currently being planted by farmers in South Africa and is awaiting final commercial approval in Kenya while Ethiopia and Mozambique continue with the biosafety review process.

As we continue to make positive impact by empowering the African farmer to become globally competitive through use of technologies, good agricultural practices, strategic partnerships, and access to efficient markets within and outside Africa, I wish to share some successes recorded during 2021 that speak directly to our 2018-2022 Strategy.

Strengthening the pool of technologies for farmers

Together with our partners, we released 11 new innovative products to the market during the year. These included three early maturing and high yielding rice hybrids with over 10 tons per hectare in Kenya through the Hybrid Rice for Africa Project. To rapidly help prime the market, we have produced 4.5 tons of seeds of the three hybrids in preparation for full commercialisation. One conventionally bred, climate smart, DroughtTEGO® hybrid maize variety was released in Nigeria through TELA Maize Project; and seven varieties of high-yielding soybean were released in Malawi through Seeds2B Project.

In addition, three best TELA® Bt hybrids, with yield advantage of 15–67 per cent relative to best commercial checks, were recommended for release in Kenya. This is a major development that awaits final approval for the hybrids' commercialisation by the Cabinet of Kenya. In anticipation of a positive decision by the Government of Kenya, AATF has commenced seed multiplication for these products to facilitate ease of supply and access by farmers immediately after Cabinet approval.

We continued with efforts to evaluate different products through National Performance Trials (NPTs) to get the products ready for release. A total of 21 NPTs were completed for various crop varieties including maize, cowpea, soybean, tomatoes and groundnuts.

We commenced work on bio-based products for livestock through the European Union Project (Bio4Africa Project) launched in July 2021 to support development of bioeconomy in rural Africa. This is a multi-partner project and AATF will facilitate reforms to support bioeconomy technologies and bio-based products in the project.

We have increased the integration of digital technologies in AATF operations that will improve technology delivery with enhanced efficiency for unique functions such as field monitoring and provision of technical advise to farmers. Drones were successfully deployed in Nigeria to guide precision agriculture management of the cassava fields in backstopping farmers using AATF technologies to maximise productivity.

Accelerating access to technologies by farmers for improved livelihoods

Deployment and commercialisation as well as capacity building showed significant traction during the year.

AATF and its seed company partners produced a total of 3,827.6 tons of certified seed for different products including maize, PBR cowpea, hybrid rice, beans, soybean, and groundnut. We planted 142,000 hectares of certified maize seed that benefited 357,352 farmers.

We licensed 11 DroughtTEGO hybrids to five seed companies in Kenya and another five in Tanzania. We also supported market priming through production of pre-commercial seed for product demonstration and outreach.

New partnerships with seed companies and farmer groups in different countries including Cameroon, Ghana, Kenya and Nigeria were entered into in support of technology deployment efforts. In addition, we worked with our partners to carry out field days, trainings, seminars and outreach activities by establishing 2,037 demonstration plots and conducting 173 field days for farmers to encourage adoption of the new varieties.

By the end of the year, we engaged 2,246 value chain actors to build a durable market system. We linked 178,622 farmers to off-takers since 2018 against a target of 182,000 to be reached by 2022 under the current Strategy, translating to about 98 per cent performance rating. With the introduction of genetically modified products into the market, special attention was given to education on Insect Resistance Management (IRM) to ensure technology sustainability which is critical to its long-term successful use.

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

We continued with efforts to engage governments, policy makers and regulators as strategic partners to improve the enabling environment for technology access, development, and use as we seek to further connect smallholder farmers with better opportunities. Driven by the need to address gaps along the agricultural value chain, we rolled out outreach and advocacy campaigns to support the deregulation processes for PBR cowpea and TELA maize in different countries. We also continued with knowledge sharing and education on innovative technologies especially those related to new emerging areas in biotechnology such as gene editing for better understanding and to inform decision making. During the year, we reached a total of 9.4 million people through advocacy and outreach efforts. We completed a rapid country assessment of the seed policy environment in different countries, an undertaking that begun in 2018.

We strive to continually grow our relationship across the continent with regional, sub-regional and country-specific initiatives with the aim of helping farmers improve their livelihoods. A key relationship we entered into during the year is with the African Forum for Agricultural Advisory Services (AFAAS) that will support technology education, deployment and uptake. In addition, we expanded our biotech footprint in Africa by launching an OFAB Chapter in Rwanda to support the development and growth of agricultural biotechnology in the country. Two other Chapters, in Malawi and Mozambique, are scheduled to be launched early in 2022.

Other key milestones of the year included launch of the OFAB Annual Day to celebrate science and local scientists who have been at the forefront in developing technologies to address the problems of African agriculture. In addition, we launched the OFAB Journalism Grant in September 2021 to deepen interactions and engagement with former winners of the OFAB Media Award to advance innovative reporting approaches in SSA. The inaugural launch saw AATF award USD33,000 worth of grants to journalists from the seven OFAB Chapters.

Our achievements in 2021 confirm our resolve to continue transforming livelihoods in SSA through innovative agricultural technologies. We could not have registered this sterling performance without the support of our investors, partners, staff, and the Board, to all whom we are eternally grateful. We look forward to 2022 with renewed energy as we begin the journey towards defining our next strategic direction.

Strategic Objective 1

AATF and OFAB-Nigeria team in a cowpea field in Nigeria, November 2021

3.6 million

- cumulative number of farmers adopting seed-based technologies over the four-year strategy implementation period.

In line with its mission, AATF continues to inject agricultural technologies into African farming systems including building support systems to address farmer production constraints for better livelihoods and improved health and wealth. Through a demand-driven approach, AATF, working in partnership with technology donors across the globe, continues to prioritise game-changing agricultural technologies that would otherwise not have been accessible to resource-constrained farmers in Sub-Saharan Africa (SSA), thereby championing the empowerment of smallholder farmers by facilitating their access to innovative technologies which are critical to modernising Africa's agriculture towards ensuring food and nutrition security for the continent.

Diversifying agricultural technologies accessed for use in Sub-Saharan Africa

The year 2021 begun with a lot of uncertainty due to the emergence of a new wave of the COVID-19 pandemic. However, AATF's efforts in the year towards diversifying agricultural technologies for farmers in SSA progressively advanced, resulting in exciting results.

In Nigeria, the TELA Maize Project received an environmental release approval for TELA drought tolerance (MON87460) and insect-resistance (MON89034) traits in the country. The approval that came less than three years since the country joined the TELA Maize Project, allowed for evaluation of the traits in multilocation on-farm trials for eventual variety certification and commercialisation.

Three best transgenic (TELA® insect resistant) hybrids (WE1259B, WE3205B and WE5206B), with a yield increase of between 15 and 67 per cent relative to commercial checks, were recommended for varietal release after conducting successful national performance trials in Kenya.

383, 860

– number of smallholder farmers reached through AATF technologies in 2021.

New products released

AATF's projects and processes are crucial in delivering Africa's economic goals and accomplishing its vision as enshrined in Agenda 2063. In this regard, AATF is facilitating farmer access to more crop varieties for the development of a competitive agricultural sector to improve people's standards of living. In 2021, AATF together with partners released a total of 11 new crop varieties as compared to eight released in 2020. These included three rice hybrids in Kenya through Hybrid Rice Project to boost rice productivity in the country. The hybrid rice varieties are high yielding, early maturing with good grain quality, and are currently giving farmers over 10 tonnes per hectare compared to four tonnes for the best commercial varieties in the market. One conventionally bred, climate smart, DroughtTEGO® hybrid maize variety, WE8206, was released and registered as SAMAZ 68 in Nigeria through the TELA Maize Project *(Table 1)*.

19.4 million

– number of people who have benefitted from AATF advocacy, outreach, and regulatory interventions over the four-year strategy implementation period.

Figure 1: Field day organised for private seed and aggregators to appreciate hybrid rice seed production for uptake in Tana River County, in Kenya

This brings to three the number of hybrid maize varieties released in Nigeria through the Project, having released two others in 2020. Seven varieties of high-yielding, adaptable and market appropriate soybean were released in Malawi through the Seeds2B Project (Table 1). In Uganda, the Seeds2B Project in collaboration with the National Crops Resources Research Institute (NaCRRI) submitted two high yielding tomato varieties to the Variety Release Committee for release. In Zimbabwe, one soybean variety (TGX2002-9FM) passed the Distinctness, Uniformity and Stability (DUS) test and its release dossier is being developed.

Table 1: Summary of products released during the year

Variety released	Crop	AATF Project	Country	Number of varieties released
DroughtTEGO® - WE8206 (SAMMAZ 68)	Maize	TELA	Nigeria	1
AH19007, AH19003, AH19006	Rice	Hybrid Rice	Kenya	3
Lundi	Soybean	Seeds2B/PASTTA	Malawi	1
Mwenezi	Soybean	Seeds2B/PASTTA	Malawi	1
SC Saga	Soybean	Seeds2B/PASTTA	Malawi	1
SC Signal	Soybean	Seeds2B/PASTTA	Malawi	1
TGX 1987-62F	Soybean	Seeds2B/PASTTA	Malawi	1
TGX 2002-3F	Soybean	Seeds2B/PASTTA	Malawi	1
TGX 2014-16FM	Soybean	Seeds2B/PASTTA	Malawi	1

Promising products evaluated

As promising products move closer to the end user – the farmer – they are tested at multilocational/national level to generate more performance data to support evidence-based release for deployment to farmers. During the year, National Performance Trials (NPTs) were completed for 26 varieties including TELA maize in Nigeria, Kenya, and Ethiopia; cowpea in Nigeria; soybean in Zimbabwe; tomatoes in Uganda; and groundnuts in Malawi *(Table 2)*. The TELA Bt maize NPTs were carried out across six locations in Kenya in 2020/2021. The results of the NPTs carried out in partnership with the Kenya Plant Health Inspectorate Service (KEPHIS), recommended three best TELA® Bt hybrids (WE1259B, WE3205B and WE5206B) with superior yield performance of 15–67 per cent over commercial checks for variety release. Expectation is that the Government will release the varieties, but the decision will only be made and communicated after approval by the Cabinet that has the authority to give the go-ahead. Further, a set of three additional DroughtTEGO® hybrids were each planted on-farm in Nigeria and in variety verification trials in Ethiopia targeting commercial release. One of the DroughtTEGO® hybrids (WE8206) was released in Nigeria as SAMAZ 68, while the trials for similar set of varieties are yet to be concluded in Ethiopia. The parental lines of the released DroughtTEGO® hybrids will be traited with drought tolerance and insect resistance genes to feed the TELA transgenic products pipeline for both countries.

Figure 2: Soybean trial site at Chisumbanje in Zimbabwe

Figure 3: Soybean trial site at Panmure in Zimbabwe

11
–
number of new crop varieties released in 2021

26
–
number of varieties evaluated in 2021

Figure 4: Mr. Paul Wabomba in a TAAT Maize demonstration field in Butere County, Kenya in February 2021.

Efforts toward enhancing adoption and scaling of hybrid rice continued in Tanzania. The second season of on-farm multilocational trials was concluded in five locations of Dakawa, Mombo, Ifakara, Mbeya and Ukiriguru. These trials, conducted under Participatory Variety Selection (PVS) process, involved 200 farmers and other rice value chain actors. They evaluated and selected the best preferred rice variety based on key parameters such as texture and other features including odour and taste of the rice varieties. Based on the evaluation, three hybrids were selected for advancement into NPTs in 2022 as part of the process towards varietal release.

To enhance access and uptake of quality seeds of key vegetable crops by smallholder farmers under the Seeds2B Project, two NPT trials for six outstanding soybean varieties were conducted in Zimbabwe, while two tomato and three groundnut varieties were submitted for release in Uganda and Malawi, respectively.

Table 2: Summary of product evaluation activities during the year

Products/crops	AATF project	Country	Performance evaluation	Number of varieties
Maize: DroughtTEGO®	TELA	Nigeria	NPTs	3
Maize: DroughtTEGO®	TELA	Ethiopia	NPTs	3
Maize: TELA®, transgenic insect-resistant	TELA	Kenya	NPTs	6
Rice: NUE-12, NERICA-4	Hybrid Rice	Ghana, Nigeria, Uganda	Germination test	2
Cowpea	PBR Cowpea	Nigeria	Commercial release	1
Soybean	Seeds2B	Zimbabwe	NPT	6
Tomatoes	Seeds2B	Uganda	NPT	2
Groundnut	Seeds2B	Malawi	NPT	3
Total				**26**

A robust product development pipeline

AATF continued with product development in efforts to strengthen Africa's market portfolio with new products to improve agricultural performance.

The third confined field trials on stacked drought- and insect-resistant (DT-MON87640 + Bt-MON89034) traited hybrids for Nigeria were completed during the year. The results were used to secure environmental release of TELA traits by the National Biosafety Management Agency (NBMA) in October 2021, paving way for the conduct of multilocation on-farm trials for variety release and certification in 2022. On average, hybrids with Bt MON89034 gave 19 per cent higher yield relative to non-Bt, isogenic hybrids under artificial stem borer infestation and natural infestation by fall armyworm.

As of November 2021, the TELA trait integration (TI) pipeline had a total of 202 inbred lines traited with various transgenes. Of these 76 lines were traited with Bt MON810, 53 inbred lines with drought tolerance (MON87460), and 40 inbred lines with stacked traits (MON810 + MON87460). In addition, two inbred lines were stacked with Bt (MON89034) and Roundup Ready (NK603) traits for use in South Africa only, where farmers have indicated willingness to pay technology fee (royalty) for the NK603 trait but will get the Bt MON89034 royalty-free. There are 31 inbred lines traited with MON89034 transgene that are either in stock or in pre-foundation seed increase stage in South Africa. From this pool of traited inbred lines, several promising hybrids could be made for different target agro-ecologies and to meet farmers' preferences in project countries where the TELA traits have been deregulated.

The Hybrid Rice Project completed the development of 22 aromatic female parents (S-lines) which have been added to the list of global public goods. These parental lines are now available to partner seed companies for use in the development of rice hybrids.

The NEWEST Rice Project conducted NUE-12 rice and NERICA-4 seeds regulatory trials as part of requirements for the environmental release of NUE-12 in Ghana and Nigeria. The trial was aimed at evaluating if genetic transformation had resulted in unintended changes including the reproductive biology of the transgenic rice event that could affect environmental persistence or crop establishment. The results supported the conclusion that the genetic modification process did not result in any unintended, unexpected changes to seedling establishment. Data generated from the tests will be included in the NUE-12 dossier as part of the requirements for dossier preparation and application for environmental release of NUE-12 in Nigeria and Ghana. However, the submission of the dossier will be subject to the re-verification of the first efficacy results of the NUE12 event. The re-verification or confirmatory trial will be conducted in 2022.

The Pod Borer Resistant (PBR) Cowpea Project continued efforts towards the development of a second generation PBR cowpea product (the PBRCowpeaXTRA) combining stacked genes of Cry1Ab and Cry2Ab in two simultaneous processes (stacked molecular gene construct and breeding stack). The Project conducted confined agronomic field trials for PBR cowpea in Nigeria, Burkina Faso and Ghana to support preparation of deregulation dossiers (Cry2Ab in the case of Nigeria, and Cry1Ab for both Burkina Faso and Ghana). The trials aimed at collecting sufficient data on the cowpea 245F lead event and 105B back up event of Cry2Ab transgene. In Ghana, the dossier for environmental release of first generation PBR cowpea containing event 709A (Cry1Ab) was submitted to Ghana's National Biosafety Agency (NBA). The reviewing process of the dossier, delayed to await inauguration of the NBA Board of Trustees, is anticipated in early 2022, leading towards environmental release of the PBR cowpea in Ghana.

Figure 5: A PBR Cowpea field in Kano State, Nigeria

The pyramiding of Cry1Ab and Cry2Ab via breeding stack process for the development of PBRCowpeaXtra has made significant advances. In Nigeria, crosses between SAMPEA 20-T and event 245F have been done and BC3 lines are now available. Similar backcrosses are being made in Burkina Faso and Ghana.

In order to enhance increased adoption, transfer of PBR traits into additional farmer varieties is ongoing in Ghana and Nigeria. The PBR trait (event 709A) is being transferred into farmer preferred varieties to have at least one highly adapted PBR Cowpea variety developed for each cowpea agroecological production zone of these countries. In Nigeria, four recurrent parents/varieties (SAMPEA-14, SAMPEA-15, SAMPEA -17 and SAMPEA -18) are being used for this purpose and BC3F1 lines have been produced from this effort. The backcross program will soon be finalised, and it is expected that by 2022, new PBR Cowpea lines will be advanced into National Performance Trials (NPT). In Ghana, Padi-Tuya and Apaagbaala varieties are being used as the recipient parents for event 709A and, so far, BC4F1 seeds have been generated. The new lines will be included in NPTs if the environmental release of cowpea event 709A is issued in 2022. Burkina Faso has also successfully introgressed the PBR trait into three farmer preferred varieties, namely Gourgourou, Nafi and IT98, that are well adapted to their respective production zones to aid adoption when released.

Figure 6: AATF staff inspecting a PBR Cowpea field in Nigeria

Another interesting development in 2021 was the addition of bio-products into AATF's pool of technologies through the European Union (EU) funded Bio4Africa Project focused on deploying simple, small-scale, and robust bio-based technologies. During the year, AATF conducted cost-benefit analysis (CBA) for nine biobased technologies including biodigestion, briquetting, pyrolysis, hydrothermal carbonisation, densification, biocomposites production, production of bioplastics, pelletisation, and green biorefinery that were earmarked for pilot testing in Uganda, Senegal, Cote D' Ivoire and Ghana. The CBA exercise confirmed that all the bio-based technologies have the potential to deliver strong economic value to beneficiaries. AATF and its partners hope to get these technologies to farmers as they will improve the environmental, economic, and social performance of their forage agri-food systems.

Figure 7: A visit to a PBR Cowpea seed production site by AATF staff in Nigeria

Scaling-up mechanisation and digital agriculture operations

Concerted effort at anchoring mechanisation and digital solutions for sustainable and transformative agriculture continued. In 2021, Agridrive Ltd, an AATF social enterprise that is commercialising mechanisation and digital agriculture in Nigeria, developed an innovative approach to mechanisation service provision by using digital technologies to link farmers to critical knowledge necessary to drive productivity and market gains for better income and livelihood among farmers. This has been achieved through Agridrive App, a software application developed in 2020 and aimed at effectively building information linkages and driving higher mechanisation usage by smallholder farmers.

Insecurity and delayed or excessive rains, caused a decline in mechanisation operations executed. Agridrive Ltd executed 15,985 operations, representing 65 per cent of the planned work.

With digital technologies rapidly generating interest among farmers for service and information access, Agridrive Ltd promoted digital innovation integration into AATF projects and initiatives. During the year, a total of 800 farmers were linked to AATF technologies (seed and non-seed based) via digital solution platforms. AATF partner farmers are booking and paying for mechanisation services through Apps, thereby enjoying better farming experience and satisfaction.

800

– number of farmers linked to AATF technologies using digital solution platforms

In joint venture with AATF, Agridrive has deployed drones to generate field data critical to field management practices and improved productivity. The Agridrive App was used to download the drone-generated data and imagery. The field metrics generated by the drone include those related to plant population, weed pressure, soil nutrients, and water logging. AATF worked with Assecco and Kurai to support data generation and analysis, respectively.

Ensuring smallholder farmers access new technologies

Guided by a bold vision for a prosperous and food secure Africa where livelihoods of smallholder farmers are transformed by innovation, AATF committed to reach 16 million smallholder farmers by the end of 2022 with transformative technologies directly or through partnerships. In 2021, AATF reached 383,860 smallholder farmers. This brings the cumulative number of farmers reached directly to 3.6 million over a four-year period of its strategy implementation with one more year to go for the current phase. The farmers reached thus far represent 91 per cent of the 4 million farmers being targeted over the five-year implementation of the current strategy. Another 19.4 million people have benefitted from AATF advocacy, outreach, and regulatory interventions. This means that by 2021 AATF had already surpassed the 16 million farmers/stakeholders targeted under the current institutional strategy 2018-2022. AATF anticipates reaching more farmers and stakeholders before the end of 2022.

15,985

– number of mechanisation operations performed in 2021

Effectively mainstreaming gender into AATF projects

Figure 8: Margaret Gioche, a farmer in Nakuru County, Kenya, showing her maize seed

AATF is making deliberate efforts to include gender mainstreaming into its projects to ensure equitable access to the opportunities and benefits its projects and institutional development efforts offer. During the year, a gendered market study of Hybrid Maize Adoption was conducted in Nigeria to facilitate the successful commercialisation of TELA maize products by ensuring they are demand-driven, market preferred, and developed to fit the needs of identified value chain actors. The study results showed that more men than women and youth maize farmers have benefited from TELA technologies. The lower participation of women in the maize value chain compared to men, was partly attributed to socio-cultural and religious restrictions in northern Nigeria which excludes their participation in public engagements.

Recommendations made included awareness creation through traditional rulers and religious leaders to ensure all genders are involved in maize value chain activities and decision making; sensitisation of the farmers on importance of mechanisation of maize production processes; training farmers on increased profit margins associated with the hybrids; training in good agronomic practices (GAPs); and enhancement of market linkages for farmers.

Looking forward

In the coming year, AATF will continue with product development and performance evaluations with farmers to aid in variety registration and commercialisation. AATF in collaboration with project commercial partners will continue with seed production to prime market for commercialisation and create awareness on the benefits of using different innovative products developed by AATF.

Strategic Objective 2

AATF and OFAB-Nigeria team in a cowpea field in November 2021

Accelerating commercialisation of agricultural technologies, especially for high yielding and adaptable crop varieties with compelling traits to improve livelihoods of smallholder farmers, is at the epicenter of the current AATF strategy. The adoption of AATF technologies which range from improved seeds of high yielding varieties to mechanisation and digital agriculture, when complementarily combined in a holistic approach, will offer a strong pathway to increased food and nutrition security – leading to the transformation of African agriculture and economies. This strategic objective primarily focuses on efforts and activities that are geared towards facilitating efficient market systems that pragmatically respond to demand and supply of AATF technologies. It ensures that smallholder farmers have access to these technologies and the necessary farming inputs required to stimulate optimum productivity on-farm. This calls for engagement with and enhancement of the capacity of actors along the agricultural value chain to ensure timely availability of quality input on the one hand and education and awareness on the other for strong buy-in and use. Key stakeholders include the private sector especially seed companies, agricultural extension agents and farmers. The AATF commercialisation processes explore business approaches at delivering released agricultural technologies or products into the market.

Accelerating commercialisation of agricultural technologies for improved farmer livelihoods

In 2021, an Impact Assessment on DroughtTEGO® hybrids developed from the Water Efficient Maize for Africa (WEMA) Project was conducted to determine the adoption of conventionally bred DroughtTEGO® varieties and its impact on maize productivity in Kenya, Uganda, and Tanzania. The assessment showed a high adoption rate of 39 per cent in Kenya; 17 per cent in Uganda and 11 per cent in Tanzania. The study reported that Kenya had the highest maize productivity of 3.6 tons per hectare relative to the non-adopters of DroughtTEGO® hybrids with productivity of 2.2 tons per hectare (64% yield increment among adopters over non-adopters). Farmer income was highest in Kenya with US$3,532 per hectare among adopters relative to non-adopters with an income of US$2,045 per hectare (73% increment). The higher adoption rate and positive economic impact in Kenya could be attributed to the large number of demonstration plots (over 4,600) and over 240 field-day workshops conducted in five growing seasons – through which more than 61,000 farmers (57.3% women and 42.7% men) were reached.

Unfortunately, deployment and commercialisation strategies similar to those rolled out in Kenya as pilot could not be done in the other project countries before the end of the WEMA Project Deployment Phase in early 2018. The rapid adoption and impact of DroughtTEGO® hybrids provide strong justifications for out-scaling the hybrids across SSA, leveraging on the AATF deployment and commercialisation business model.

The PBR cowpea was commercially launched in Nigeria in June 2021 by the country's leadership at an event organised in Kano State *(Figures 9 and 10)*. The launch was followed by the immediate uptake through sales of 4 metric tons of seed that had been produced to prime the market. The interest by farmers for this product indicates good business potential and opportunity for the seed companies licensed to produce certified seeds of PBR cowpea and the potential of the product to improve crop's productivity in the country.

2,246

– number of value chain actors engaged in 2021

Figure 9: Packaged PBR cowpea seed on display during the commercial launch of the product in Kano State, Nigeria, in June 2021

Figure 10: Packaged PBR cowpea seed on display during the commercial launch of the product in Kano State, Nigeria, in June 2021

Strategic engagements fostered for an effective product delivery system

AATF strengthened its relationships with the seed sector through its regional and country-specific partners and seed associations. During the year, AATF participated at the African Seed Trade Association (AFSTA) Congress in September 2021 where AATF's Executive Director made a presentation on 'Precision agriculture and seed science innovation and enabling environment for seed industry in Africa'. The Congress brought together stakeholders to discuss topical issues involving the seed sector both in Africa and globally.

At the country level, AATF worked with national seed associations in Africa including collaborating with the Seed Entrepreneurs Association of Nigeria (SEEDAN) to establish ECOBasic Seed Company Limited (ECOBasic). The AATF for profit subsidiary was launched in November 2021 by AATF in collaboration with the Federal Government of Nigeria, Seed Entrepreneurs Association of Nigeria, the National Agricultural Seed Council, Bill & Melinda Gates Foundation and Alliance for a Green Revolution in Africa to support production of foundation seed in West Africa region. In Uganda, AATF collaborated with Uganda Seed Trade Association (USTA) in promotional activities for maize hybrids to improve food productivity in the country while in Kenya, AATF participated in the Seed Trade Association of Kenya (STAK) Congress during which it also exhibited of its products. Seed companies, farmer organisations, extension service providers and farmers were engaged during field trials in different countries to build appreciation for the products, create interest and open pathways for delivery that will grow uptake and demand for new products.

Advancement and utilisation of modern technologies to improve agricultural productivity in Africa, including genetically modified technologies, are primary issues of focus for AATF's work. In 2021, AATF worked with various partners to explore wider product delivery pathways to increase farmer access to its technologies and varieties. During the year, different partners in Kenya including representatives from seed companies, members of the National Performance Trials Committee (NPTC), and board members and technicians from KEPHIS visited the Bt maize NPTs for updates and awareness of the benefits of these transgenic hybrids. Three (WE1259B, WE3205B and WE5206B) out of the six Bt (MON810) hybrids that were entered into the NPTs were recommended for registration in Kenya.

Capacity strengthened for quality seed production and dissemination

A key aspect of the AATF commercialisation process is the production of quality seed in a timely and efficient manner. The commercialisation process explores elaborate business approaches at delivering released agricultural technologies or products into the market. A system to support the rapid multiplication of products at scale was also developed to enhance availability and the sustainable use of products by farmers. Public-private partnerships are critical to this process especially in multiplication of early generation seeds (EGS) and production of certified seeds. These products (EGS and certified seeds of varieties) are usually licensed by AATF to seed companies who facilitate production and distribution of the seeds through agro-dealer networks.

During the year, seven capacity strengthening efforts were carried out for technical staff of licensed seed companies involved in seed production and dissemination, reaching a total of 251 technical officers. In Kenya, a Seed Production Research (SPR) training was carried out for staff of the Kenya Agricultural and Livestock Research Organization (KALRO) and QualiBasic Seed company (QBS). AATF worked with Bayer through the TELA Project to deliver the virtual training workshop that was attended by 26 participants (5 women and 21 men). The skills acquired from the workshop were used to plant two Bt (MON810) SPR trials at two sites in Kenya. Data collected will be used to support seed companies that will commercialise TELA Bt maize hybrids in Kenya. In addition, four virtual training workshops on seed production were carried out to enhance productivity and quality of certified seed. Products of focus include DroughtTEGO® maize hybrids and the Pod PBR cowpea. The trainings, which featured a total of 31 participants for the two sets of products, were aimed at preparing AATF licensed seed companies and partners for commercialisation. Attendance for DroughtTEGO® maize trainings included participants from seven and four small and medium enterprise (SME) seed companies from Nigeria and Tanzania respectively, extension agents from Somalia and technical staff from the Central African Agricultural Research Institute (ICRA) in Central African Republic (CAR). The PBR cowpea training took place at the Institute of Agricultural Research, Ahmadu Bello University (IAR/ABU) Zaria with 35 participants (33 male, 2 female) from private seed companies (Figure 11). Another 185 seed certification officers (141 male, 44 female) from the National Agricultural Seed Council (NASC) were also trained at IAR to enhance their capacity in seed sampling techniques.

Product dissemination to farmers is principally anchored on the provision of vital information required by farmers to access the right product in addition to availing the technical support necessary to facilitate the usage of the product. The commercialisation pipelines used explored various approaches including government pathways to enhance seed/product outreach to smallholder farmers and creating market systems to drive up sales and purchase by grain off-takers and agro-processors. Extension services were intensely engaged to support technology transfer. In 2021, AATF carried out trainings on GAPs as well as stewardship support functions, with special emphasis on aspects related to insect resistance management (IRM), for 148 field extension officers and 37 Directors of Extension Service across different regions of Nigeria. The trainings enable them to offer efficient support service and guidance to farmers on the use of the PBR cowpea technology. In addition, a National Stewardship Committee (NSC) composed of representatives from the National Biotechnology Development Agency (NABDA), NASC, IAR, National Agricultural Extension and Research Liaison Services (NAERLS), private seed companies and AATF was set up in April 2021 to oversee stewardship activities in Nigeria. The committee will help monitor field compliance, initiate response to incidences and examine the evolution of the Maruca pest population for its susceptibility/resistance to Cry1Ab protein. A stewardship handbook was developed to help members of the NSC, and extension officers involved in product stewardship provide effective training to farmers on the compliance requirements of the PBR cowpea technology.

178,622

– the cumulative number in market linkages between farmers and off-takers over four years of the strategy implementation period (2018-2022)

Figure 11: Participants at the PBR cowpea training workshop for seed company staff in Nigeria

Enhancing production of quality certified seed

The development of an efficient seed production and distribution system is crucial to the effective commercialisation and large-scale adoption of AATF products. In 2021, AATF and its seed company partners produced a total of 3,826.6 certified seed (3,573 mt of maize, 6.1 mt of PBR cowpea, 4.5 mt of hybrid rice, 60 mt of beans, 76 mt of soybean, and 107 mt of groundnut).

The amount of certified maize seed produced in 2021 was 3,573 mt, comprising 953 mt of TEGO; 17 mt of TELA; 100 mt of StrigAway; and 2,503 tons of TAAT Maize. This was sufficient to meet the planting needs of 357,352 farmers and adequate to cultivate over 142,000 hectares of farmland *(Table 3)*.

Since inception in 2017, QBS has sold 264 tonnes of maize foundation seed, which is enough to plant 10,560ha of certified seed and produce 36,960 tonnes of certified seed. This certified seed is adequate to plant 1,478,400ha under maize and produce 4,435,200 tonnes of grain to feed over 73 million people.

The planting needs for about 3,000 farmers were provided for through the sale of 6.1 tons of PBR cowpea certified seed produced in Nigeria *(Table 4)*. The project signed a sub-agreement with the seed unit of IAR to produce foundation seed and certified commercial seed for delivery to the three AATF-licensed seed companies (GoldAgric, Tecni Seed Ltd, and Maina Seed company) that were engaged for commercialisation of PBR cowpea in Nigeria.

The Hybrid Rice Project produced 4.5 tons of seed to prime the market for full commercialisation in Kenya, while Seeds2B project produced about 60 tons of certified bean seed in Uganda. In Malawi, the Seeds2B project produced early generation seed of 76 tons of soybean and 107 tons of groundnut *(Table 4)*.

During the year, AATF continued with product licensing which resulted in the licensing of 11 DroughtTEGO hybrids to five seed companies in Kenya and another five in Tanzania.

2,037

– demonstration fields established in 2021

173

– number of field days conducted during the period

Table 3: Certified maize seed produced in 2021

Product	Quantity of seed (tons)	Number of farmers reached
TEGO hybrids	953	95,347
TELA hybrids	17	1,705
StrigAway	100	10,000
TAAT Maize	2,503	250,300
Total	**3,573**	**357,352**

Table 4: Seed production summary for other products

Product	Quantity of Seed (tons)	Country
Cowpea	6.1	Nigeria
Rice	4.5	Kenya
Beans	60	Uganda
Soybean	76	Malawi
Groundnut	107	Malawi
Total	**253.60**	

Farmer demonstrations, awareness, and education

AATF facilitated the promotion of new products through demonstration plots and field days conducted in partnership with seed companies. The promotion efforts were aimed at growing uptake and demand for seed of new products.

A total of 2,037 demonstration plots were established by AATF and its partners in 2021 for various seed varieties (136 for soybean, 80 for groundnut, 824 for PBR cowpea, and 997 for maize hybrids) to support product awareness/education, sensitisation and outreach activities. The plots were used to organise a total of 173 field days (143 – maize hybrids, 4 – hybrid rice, 26 – soybean) to stimulate farmer-interest in adoption of these new varieties.

Of the 997 demo plots for maize hybrids, 811 plots were established with the support of QBS while the Technologies for African Agricultural Transformation (TAAT) Maize Compact established the remaining 186 plots. The TAAT compact-facilitated demo plots were conducted in Nigeria (90), Kenya (47), Ghana (38), and Uganda (11) through which 3,600 farmers were successfully reached. QBS on the other hand established its demos in seven countries (311 in Kenya, 285 in Tanzania, 83 in Uganda, 31 in Malawi, 65 in Mozambique, 33 in Zambia, and 3 in South Africa). These demonstration plots were used to organise 143 field days with TAAT Compact organising 44 field days (20 in Ghana, 16 in Kenya, 4 in Uganda, and 4 in Nigeria) while QBS conducted the remaining 99 field days (42 in Kenya, 16 in Tanzania, 10 in Uganda, 8 in Malawi, 20 in Zambia and 3 in South Africa) reaching a total of 7,791 farmers (4,655 females and 3,076 males). Through the field days *(Figure 12)*, farmers were enlightened on the attributes of the hybrids and received training on GAP required to optimise high productivity of the varieties that were showcased.

253.60 tons

– total quantity of certified seed produced in 2021

Figure 12: Farmers participating in the promotion of Champion F1 (WE6103) during field days in August 2021 in Northern Uganda

In a bid to build and grow technology champion farmers, AATF established special demonstration plots on the farms of four farmers in Kakamega County, Western Kenya. AATF was intensely involved in the management of field operations incorporating innovations that support optimum crop performance for profitable agriculture to farmers. AATF supported farmers with mechanised land preparation to improve timely operations and efficiency (for ploughing, harrowing, ridging, etc.). The support provided also included the provision of seeds of DroughtTEGO® and legumes (field bean) to the farmers to demonstrate and promote crop rotation. Pest management was addressed through the supply of fall armyworm control insecticides to protect maize yields. Training on GAPs which are necessary and crucial to increase productivity was conducted through field days for farmers.

The PBR Cowpea Project set up 824 demonstration plots/trials in 30 states across Nigeria in partnership with the NAERLS to give good exposure and understanding of the PBR cowpea product to farmers.

Through the Seeds2B Project, 216 demonstration fields were established in Uganda and Malawi *(Figure 13)* involving 136 plots for soybean and 80 plots for groundnut to creating awareness and dissemination of the improved crop varieties. Fifteen (15) focus group discussions were organised and 26 field days conducted

Figure 13: Soybean field day in Zomba, Malawi in June 2021

to promote project crops among targeted farmers and stakeholders. A total of 3,767 farmers (1,539 males and 2,228 females) were reached through these Seeds2B Project activities in 2021.

The Hybrid Rice Project organised one field day in Kenya *(Figure 14)* and three in Tanzania for key stakeholders involved in rice seed production including private seed companies to provide a first-hand view and better understanding of the business potentials of hybrid rice, with a view to stimulate political goodwill, buy-in and high uptake of the product in both countries.

Figure 14: Key stakeholders at a rice plot during the field day in June 2021 in Hola, Kenya

Figure 15: A group of farmers during a training in Butere County, Kenya, in Feruary 2021

Farmer linkage to off-takers

AATF and its partners facilitated market systems that efficiently respond to demand and supply of its technologies. By the end of 2021, AATF had successfully engaged 2,246 value chain actors including seed companies, agro-dealers, seed producers, grain traders, and processors to help build a durable market system supportive of commercial agricultural development in Africa. This brings the cumulative number of market linkages between farmers and off-takers to 178,622 in the last four years, translating to approximately 98 per cent of the 182,000 five-year target set in the current AATF strategy (2018 -2022).

Looking forward

In the coming year, AATF will continue with building sustainable deployment pathways for its technologies towards the roll-out and accelerated commercialisation of its products in efforts to significantly improve and positively impact the livelihoods of smallholder farmers who make up 80 percent of SSA's labour force.


SAMPEA 20-T

Strategic Objective 3

A youth tests the deployment of drones to guide a precision agriculture management of a cassava field in Kano State, Nigeria

530

–

number of journalists trained on science reporting across OFAB Chapters

A supportive and enabling policy environment comprising policies, institutional arrangements, markets, and other support services are essential for developing, testing, deployment and adoption of productivity enhancing technologies and innovations that are expected to drive agricultural transformation in Africa. AATF works with public and private sector partners and stakeholders to address policy and regulatory bottlenecks including market failures affecting the introduction of agricultural technologies to markets and farmers in Africa. These efforts by AATF and its partners encompass rapid assessment of the policy environment governing agricultural inputs at country and regional levels, in addition to knowledge sharing, capacity strengthening and targeted advocacy engagement of stakeholders to catalyse desirable reforms.

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

Policy assessment and support for agricultural value chain

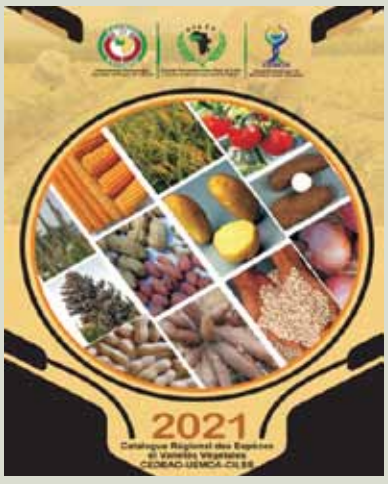
The Technologies for African Agricultural Transformation (TAAT) Policy Enabler Compact was designed by the African Development Bank (AfDB) in 2018 to support efforts towards creation of an enabling environment for technology deployment and adoption by famers.

Through assessment and advocacy for policy reform interventions essential for building functional seed systems, the AATF-coordinated TAAT Policy Compact completed rapid country assessment of the seed policy environment in Burundi, Liberia and Sierra Leone, cumulatively bringing to 15 the number of countries where assessment of the seed policy environment has been conducted since 2018. The assessment sought to map out the seed system to identify policy, regulatory and institutional gaps to inform focused discourse with governments on policy interventions to engender efficiency in quality seed supply.

AATF partnered with the Department of Research Services (DARS) in Malawi to draft and validate the Plant Variety Protection (PVP) regulations. Finalization and adoption of the regulations will facilitate the operationalization of the Plant Breeders Act (2018) a key milestone that will help to incentivize plant breeders and foster innovations and the development of new plant varieties.

Supporting accreditation of seed, fertiliser, and agro-input suppliers

During the year, AATF in partnership with the International Institute of Tropical Agriculture (IITA) concluded assessment of existing accreditation frameworks for agro-input dealers in eight countries of the Democratic Republic of Congo (DRC), Ghana, Kenya, Malawi, Mozambique, Nigeria, Rwanda and Tanzania. This led to development of catalogues of accredited agro-dealers that can reliably supply quality seed to farmers using the Agro-Input Dealer Accreditation Protocol developed through the TAAT Policy Compact to identify accredited genuine seed suppliers and agro-dealers. The catalogues were disseminated to the stakeholders including private seed companies, national plant protection and farmer organisations in Benin, Malawi, Nigeria and Tanzania where over 100 seed companies and close to 5,000 accredited agro-input dealers were listed to inform farmers of sources of quality inputs. AATF and IITA further conducted a survey in Nigeria and Tanzania to promote the adoption and use of a Web-based accreditation system and digital tools (Seed Tracker, Akilimo and Nuru Apps) to enhance traceability and quality control of Agro-Inputs.



15

– number of countries where assessment of the seed policy environment has been conducted since 2018

Facilitating implementation of regionally harmonized regulations and protocols for technology release and registration

AATF continued with efforts to build upon previous work towards accelerating domestication and implementation of regionally harmonised seed and pesticide regulations in two of Africa's regional economic communities, notably the Economic Community of West African States (ECOWAS) and the East African Community (EAC).

Figure 16: Members of the Plant Variety Protection Task Force during a meeting to finalise the PVP regulations in Mzuzu, Malawi in December 2021

In the ECOWAS region AATF partnered with the West and Central African Council for Agricultural Research and Development (CORAF) and the ECOWAS Secretariat to convene a high-level consultative meeting of the West African Regional Seeds and Seedlings Committee (WARSSC) in Conakry-Guinea, in June 2021 to assess the status of domestication and implementation of the regionally harmonized Seed Regulation for West Africa. During the meeting, a review of national lists of varieties released recently in accordance with the EWOCAS procedures was done and the regional variety catalogue updated with an additional 172 new varieties which can now be traded at regional level.

Further, AATF worked with CORAF to support activities geared towards finalisation, validation, and adoption of the 'Regional Executive Regulation for Phytosanitary Control and Certification of Seed and Seedlings'. The document has been validated by stakeholders from 16 out of 17 ECOWAS Member States and is thus practically ready for implementation in the region.

In the EAC region, AATF leveraged on the US Department of Agriculture-Foreign Agricultural Service (USDA-FAS)-funded initiative to support the harmonisation of guidelines and protocols for the registration of pesticides. Towards this end, AATF supported policy dialogue meetings for the EAC Technical Working Group (TWG) on pesticides to review progress and finalise guidelines and protocols for testing and registration of pesticides in the region. This effort is aimed at fast-tracking domestication and implementation of the recently adopted harmonised EAC Guidelines on Pesticide Registration thereby contributing to enhanced regional testing and registration of pesticides. Also, a "Manual for the Assessment of the Efficacy of Desert Locust Control Operations" and "Draft Regional Guideline for Emergency Registration of Pesticides" were developed – a major milestone that will guide future pest control operations in the event of emergencies arising from the outbreak and spread of new pests such as Fall armyworm (FAW) and desert locusts.

Policy advocacy and influencing

Increasing awareness and closing the information gap

Through the Open Forum for Agricultural Biotechnology (OFAB), AATF and partners continued with awareness and information sharing among stakeholders to close the information gap on agricultural biotechnology and build better understanding of the subject. A key development in 2021 was the launch of the Annual OFAB Day in September 2021 to celebrate science and advocate for integration of science, technology, and innovation (STI) into the national development planning process. The OFAB Day (*Figure 17*) strived to celebrate local scientists for their innovative

Figure 17: Participants of the inaugural OFAB Day in Nairobi, Kenya in September 2021

roles in exploring biotechnology to advance food and nutritional security in Africa. The guest of honour during the launch, Dr Wilber Ottichilo, the Governor of Vihiga County, Kenya, noted that biotech crops are adopted globally because of their enormous benefits to the environment and human health, and contributions to the improvement of socio-economic conditions of farmers and the public.

AATF expanded its biotech outreach footprint in the East African Community (EAC) and Southern African Development Community (SADC) regions through the launch of an OFAB Chapter in Rwanda and completed discussions on the launching of new chapters in Malawi and Mozambique. The Government of Rwanda, represented by the Minister of Agriculture and Animal Resources, Dr Geraldine Mukeshimana *(Figures 18 and 19)*, welcomed OFAB to Rwanda and called on the forum to focus its efforts on addressing the myths and misinformation on genetically modified organisms (GMOs) currently prevalent in the country. The launch of the Mozambique OFAB Chapter was postponed to early 2022 following the outbreak of the Omicron variant of the COVID-19 virus in December 2021. The Government of Malawi, through its National Commission for Science and Technology (NCST), signed an agreement with AATF to host the country's OFAB Chapter. These new Chapters bring to ten the number of countries partnering with AATF to build better understanding and improved advocacy for biotechnology in Africa.

Figure 18: Participants during the launch of the OFAB Rwanda Chapter in Kigali on 27 October 2021

Figure 19: Dr Canisius Kanangire, AATF Executive Director, welcomes Dr Geraldine Mukeshimana, the Hon Minister of Agriculture and Animal Resources, Rwanda, during the launch of OFAB-Rwanda Chapter in October 2021. Looking on is Dr. Patrick Karangwa, the Director General of Rwanda Agricultural Board

In addition, AATF partnered with the Alliance for Science (AfS) to conduct a training on 'Basics of Gene-Editing and Science Reporting' in Nigeria and Kenya targeting journalists and government officials. The training was attended by 30 participants (20 males, 10 females) in Nigeria, and 25 participants (18 males, 7 females) in Kenya. AATF contributed to the development of the Gene Editing National Guidelines of Kenya as an important step towards the development of a stand-alone genome editing regulatory framework in the country. The guidelines were adopted and approved by the Government in November 2021.

Despite the challenges created by the Covid-19 pandemic in 2021, OFAB made substantial progress in pushing for improved and enabling environment for agricultural biotechnology. During the year, AATF with partners supported technical and consultative processes that led to the environmental release of TELA maize in October 2021 in Nigeria, setting the stage for NPTs (for nation-wide variety testing) and commercialisation. Giant strides were also made in Ghana where the National Biosafety Authority (NBA) gazetted the application for the environmental release of PBR Cowpea thereby allowing for the commencement of mandatory public consultations that are required as part of the review of the application. Kenya's regulatory agency, NBA, granted approval for the environmental release of virus resistant cassava (VIRCA plus). In addition, NPTs of TELA Maize progressed to completion with a decision for the commercial release of three TELA hybrids, pending Cabinet approval. The demand for Bt cotton is rapidly increasing and the Government of Kenya has been very supportive in strengthening processes that ensure seed availability to farmers. Although Kenya has made some progress in the biotech space, the approval process is still relatively slower than expected due to the subsisting ban on import of GM products. By implication, approval to commercialise GM products developed in Kenya still requires Cabinet approval, which is a tedious, lengthy, and unclear process. Mozambique granted approval for TELA to progress to multi-location trials (MLTs), while Ethiopia progressed into second year of NPTs as part of advanced activities towards the deregulation and commercialisation of TELA maize.

AATF conducted a training for OFAB Chapters in Accra, Ghana to strengthen their capacity in advocacy, influencing, and storytelling. The training brought together 32 (21 males, 11 females) participants from eight African countries. OFAB further facilitated the establishment of the Ethiopian Biosafety Society (ESoBS) and engaged them using the project's GM messaging framework to support the process with online sharing of information.

High level policy engagement

AATF and partners continued with efforts at encouraging governments in SSA to take appropriate measures such as introducing, changing, or implementing relevant policies and regulations that provide a functional enabling environment to facilitate and allow rapid access, uptake and use of agricultural biotechnologies.

OFAB engaged high-level government officials and strategic stakeholders on the continent in this regard. At

the regional level, OFAB made a presentation on 'The Role of Agricultural Biotechnology in Achieving Agenda 2063' during the Calestous Juma Executive Dialogue (CJED) series. The CJED is an annual forum organised by the African Union Development Agency (AUDA-NEPAD) to strengthen the knowledge and capacity of technocrats and policymakers in the provision of technical advice to governments on innovation and emerging technologies appropriate for their respective countries. In October, OFAB engaged the Food, Agriculture and Natural Resources Policy Analysis Network (FANRPAN) Regional Policy Dialogue to introduce agricultural biotechnology discussions and enhance education and awareness of the technology in FANRPAN's forum. Further, AATF participated in continent-wide conversations spearheaded by the Forum for Agricultural Research in Africa (FARA) on technology, research, and development in Malawi, Nigeria, and Tanzania to contribute to the United Nations Food Systems Dialogues in efforts to integrate technology and modern biotechnology in Africa's food systems.

At country level, OFAB held a consultative meeting with the office of the Governor of Vihiga County in Kenya to further garner support for its activities towards advancing agricultural biotechnology, especially considering current policy implementation hurdles in the country due to additional complex review processes that require the involvement of the Cabinet. OFAB-Kenya engaged with the Kenya Ministry of Trade, Enterprise Development, and Industrialisation for discussions to explore the high economic potential which agricultural biotechnology offers to drive more contributions in support of the Government's Big Four Development Agenda for higher and accelerated impact. OFAB-Kenya met with the Australian High Commission in Kenya for partnership opportunities on agricultural biotechnology in the country.

AATF engaged the Prime Minister of Uganda on the state of the Agricultural Biotechnology Bill in the country. It also participated in activities of the sub-committee formed to address concerns regarding utilization of GM technology and to address the concerns in the Bill. The report from the sub-committee was forwarded to the President for further consideration. In addition, OFAB-Nigeria facilitated high-level interactions with governors and ministers to solicit support for stronger policy implementation for the commercialisation of GM products (Bt Cotton and PBR Cowpea). The meetings were also used to advocate for the deregulation of TELA Maize which was successfully achieved leading to the environmental release of drought tolerance (MON 87460) and insect resistance (MON 89034) TELA traits in October 2021. OFAB-Ethiopia continued to work with Members of Parliament through seeing-is-believing tours to research stations to appreciate the progress being made and interact with farmers through the nodes created to support biotech awareness at the grassroot level. It also facilitated a government officials high-level meeting on agricultural biotechnology including visits to new laboratories built for genetic engineering research in the country. OFAB Tanzania continued with high level engagement efforts with the Ministry of Environment and the Vice President's Office in seeking for a review of its Biosafety Law to address strict liability issues in the country.

Media reporting and engagement

In efforts to promote excellence in science journalism and appreciate the contribution of journalists supporting awareness creation on sustainable agricultural technologies (particularly those related to agricultural biotechnology), AATF continued with its media engagement activities throughout the year. In 2021, OFAB Chapters trained 530 journalists on science reporting and basics of agricultural biotechnology across seven countries including Burkina Faso, Ethiopia, Ghana, Kenya, Mozambique, Nigeria and Uganda. The journalists were taken on seeing-is-believing and eating-is-believing tours to give them a first-hand experience and assessment of the huge opportunities and potential impact of agricultural biotechnology products in Ghana, Kenya and Nigeria. OFAB also held consultative meetings with professional media bodies in Kenya and Nigeria where discussions were primarily focused on safety of biotechnology products, including their trade potential and economic benefits to both countries.

A key development under media engagement was the launch of the Journalism Grant

in September 2021 during the OFAB Day Celebration. An initiative of OFAB, the Grant encourages past winners of the OFAB Media Award to undertake further activities to advance innovative reporting approaches that could enable better coverage of agricultural biotechnology issues in Africa to support formulation and adoption of evidence-based policies for the promotion of agricultural biotechnology in SSA. The inaugural launch saw AATF award USD33,000 worth of grants to journalists from the seven OFAB Chapters.

The national OFAB media awards were held across all Chapter countries in 2021 *(Figures 20 and 21)*. The winners were: Alemseged Abebe in Ethiopia; Denis Otieno, from Kenya; Hadiza Mohammed Aly, from Nigeria and Jeremy Quedraogo, from Burkina Faso. Quedraogo was also the overall Africa winner during the Africa-wide OFAB Media Awards.

Figure 20: Mr. Denis Otieno, Citizen TV Reporter, the overall winner 2021 OFAB-Kenya Media Awards.

Figure 21: Journalist participants at the national media ceremony award held in Addis Ababa, Ethiopia in October 2021

In addition, OFAB supported capacity strengthening efforts through trainings targeting journalists and editors in project countries to enhance evidence-based science reporting and to increase Forum's partnership and engagement with the media.

Way Forward

With good advancement being made in product development in many countries, the primary focus will be to intensely support deregulation processes for GM product commercialisation in Ethiopia, Ghana, Kenya and Nigeria through stakeholder engagements and seeing-is-believing tours to enhance biotech understanding, thereby accelerating approval processes in these countries.

Financial Report 2021

These AATF audited annual financial statements cover the period January 2021 to December 2021 and provide comparative data for the prior accounting period, 2020.

Funding overview

The Foundation's funding for the year 2021 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), CIMMYT, SNV Netherlands and the European Commission through the European Research Executive Agency (REA).

Over the last five years, the major funding for AATF activities has come from private sources (foundations) having contributed 65 percent of the total grant income during that period. As a public charity, AATF has maintained its funding within the allowable threshold having received 35 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 the Foundation's funding for the period 2017 to 2021.

Source of Funding: 2017 – 2021 (US$)

	2021	2020	2019	2018	2017	Total
Public Funding						
Funding from government agencies	3,410,556	4,655,846	6,057,928	5,081,842	4,729,624	23,935,796
Funding from multilateral donors	357,248	893,772	1,429,823	807,578	-	3,488,421
Funding from international development organisations, NPOs and public foundations	127,168	129,843	223,137	408,778	354,002	1,242,928
Total funding from public sources	**3,894,972**	**5,679,461**	**7,710,888**	**6,298,198**	**5,083,626**	**28,667,145**
Private Funding						
Funding from private foundations	8,922,814	8,392,592	10,711,134	9,072,877	16,252,247	53,351,664
Funding from other private institutions	-	-	-	-	-	-
Total funding from public sources	**8,922,814**	**8,392,592**	**10,711,134**	**9,072,877**	**16,252,247**	**53,351,664**
Total funding	**12,817,786**	**14,072,053**	**18,422,022**	**15,371,075**	**21,335,873**	**82,018,809**

Statement of Financial Position as at 31 December 2021 (US$)

	2021	2020
ASSETS		
Non-current assets		
Property, plant and equipment	227,983	338,014
Right-of-use assets	839,352	957,782
Intangible assets	-	-
Investments in subsidiaries	1,125,248	1,039,299
Loans to group companies	567,726	499,249
	2,760,309	2,834,344
Current assets		
Trade and other receivables	1,268,467	759,597
Contribution receivable	1,225,449	1,492,440
Cash and cash equivalent	19,042,589	17,153,247
	21,536,505	19,405,284
Total assets	**24,296,814**	**22,239,628**
EQUITY AND LIABILITIES		
Equity	10,525,966	9,998,214
Non-current liabilities		
Lease liabilities	876,353	970,551
Current liabilities		
Payables and accruals	1,165,207	1,366,660
Lease liabilities	94,198	83,596
Deferred income	184,402	307,054
Unexpended grants payable	11,450,688	9,513,553
	12,894,495	11,270,863
Total equity and liabilities	**24,296,814**	**22,239,628**

Statement of Profit or Loss and Other Comprehensive Income for the year ended 31 December 2021: Abridged version (US$)

	2021	2020
Income		
Grant income	12,817,786	14,051,274
Other income and gains	1,840,462	1,350,374
Deferred income	122,652	-
	14,780,900	**15,401,648**
Expenditure		
Project related expenses	11,923,050	11,509,466
Management and general expenses	2,330,096	2,529,256
	14,253,146	**14,038,722**
Net surplus for the period	**527,754**	**1,362,926**
Percentage of project related expenses	**83.65%**	**81.98%**
Proportion of management and general expenses	**16.35%**	**18.02%**

Statement of Cash Flows for the year ended 31 December 2021: Abridged version (US$)

	2021	2020
Net cash provided by operating activities	86,630	1,991,062
Net cash (used in) investing activities	(199,863)	(416,385)
Net cash provided by financing activities	2,002,575	1,227,839
Total cash & cash equivalents movement for the year	1,889,342	2,802,516
Cash and cash equivalents at the beginning of the year	17,153,247	14,350,731
Total cash and cash equivalents at end of the year	19,042,589	17,153,247

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 $527,754 and $1,362,926 in the current and the prior year respectively. This represented a decrease of 61.28 percent from the net surplus after tax of the prior year. The decrease was primarily because DFID funding ended in 2020 hence a 100 percent decrease in unrestricted income by $1,603,136 as compared to the prior period. However, there was a marginal increase of $369,649 in restricted income up from $12,448,138 in 2020 to $12,817,787 in the current period, translating to an increase of 2.97 percent. Even though the net surplus decreased by 61.28 percent, the financial health of the Foundation is sound given the steady growth in its equity and reserves levels. The Foundation 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.

Foundation revenue decreased marginally by 4.03 percent from $15,401,648 in the prior year to $14,780,900 for the year ended 31 December 2021. This was majorly due to the absence of DFID funding which came to an end during the third quarter of 2020. However, overhead income increased by 60.27 percent up from $746,508 in 2020 to $1,196,436 in 2021. Other operating income, which are largely contributed by investments in fixed deposits increased to $644,026 from $577,661 leading to an 11.49 percent rise as compared to the prior year. COVID-19 pandemic affected the implementation of some activities which in turn led to decreased income since AATF income recognition policy is based on the matching principle, that is, income is recognized when spent hence decreased activities in restricted projects attracts decreased income and vice-versa.

Foundation cash flows from operating activities decreased from $1,991,062 in the prior year to $86,630 for the year ended 31st December 2021. Cash flows used in investing activities reduced marginally by $216,522 whereas those from financing activities increased significantly by $2,002,575 as compared to the previous period. We received substantial amounts of grant disbursements from donors leading to an overall increase of $1,889,342 in total cash flows. Overall, the cash flow position of the Foundation is very strong with cash and cash equivalents amounting to $19,042,589 up from $17,153,247 in the prior year.

The outlook of the Foundation is favourable with its main traditional donors continuing to provide support. The Foundation has opportunities of getting new funding from both the existing and potential donors. AATF is grateful to all its investors for their continued support to ensure resource-constrained farmers can access affordable agricultural technologies to improve their livelihoods.

AATF Board of Trustees (November 9th 2021)

Ousmane Badiane
Chairperson

Canisius Kanangire
Executive Director

Dahlia Garwe
Vice Chairperson

Djime Adoum

Aggrey Ambali

Shey Tata

Noble Banadda
(Deceased)

Bernard Slippers

George Sarpong

Sylvia Horemans

Ingrid Wünning Tschol

Hamadi Boga
Kenya Government
Representative

Garba Sharubutu
Nigeria Federal Government
Observer

Dorothy Nyambi
Board Observer

Muhammadou Kah
Board Observer

AATF STAFF 2021

1 **Abed Kagundu -** Program Officer Regulatory Affairs
2 **Alhaji Tejan-Cole -** Director Legal Affairs
3 **Amos Kiprotich Kimebur -** Head of Finance
4 **Buke Fatuma Wario -** Administrative Assistant/ Events Coordinator
5 **Caleb Obunyali Omwibali -** Program Officer - TELA
6 **Caroline Kihara Thande -** Administrative Assistant - TELA
7 **David Kipkosgei Tarus -** Seeds2B Coordinator
8 **Denis T. Kyetere -** Executive Director
9 **Edith Kouko -** Project Officer - RICE
10 **Emmanuel Okogbenin -** Director Program Development & Commercilisation
11 **Francis Nang'ayo -** Senior Manager - Regulatory Affairs
12 **Francis Nwankwo -** Stewardship Manager
13 **Fredah Nyaga -** Finance and Procurement Officer
14 **George Marechera -** Agribusiness Development Manager
15 **Gordon Oduor Ogutu -** Liasion Officer
16 **Issoufou Abdourhamane -** Project Manager - Cowpea
17 **Jacquine Kinyua -** Executive Officer
18 **Jane Akinyi Achando -** Legal Officer
19 **Jonga Munyaradzi -** Seed Production Manager
20 **Josephine Mailu -** Head of Human Resources
21 **Moussa Elhadj -** Director Finance and Administration
22 **Nancy Muchiri -** Senior Manager - Communication and Partnership
23 **Paul Owolabi -** Associate Finance and Administrative Officer
24 **Ruth Rotich -** Monitoring and Evaluation Officer
25 **Samuel Angwenyi -** Project Officer - TAAT
26 **Sanni Kayode -** Project Manager - Rice
27 **Sofia Tesfazion -** Director Resource Mobilization
28 **Sylvester Oikeh -** Project Manager - TELA
29 **Simon Eze -** Driver - Abuja
30 **Daniel Willy -** Program Officer - TAAT Policy
31 **Monica Ndoria -** Regional Advocacy Coordinator - TELA
32 **Stephen Wafula -** Driver - Nairobi
33 **Stephen Obunga -** Projects Accountant
34 **Mary Asorit -** Accountant
35 **Howard Okiror -** Legal Officer
36 **Cecilia Limera -** Program Officer - Product Development and Commercialisation
37 **George Achia -** Communications Officer - East and South Africa
38 **Joanne Muthie -** Digital Communications Officer
39 **Vitumbiko Chinoko -** Project Manager - OFAB
40 **Alex Abutu -** Communications Officer - West and Central Africa
41 **Moses Taiwo -** Program Officer -Seed Systems
42 **Wilson Kivati -** Resource Mobilization Officer
43 **Ijeoma Chinyire Akaogu -** Program Officer -Cowpea
44 **Dorothy Onyango -** Program Officer - Rice
45 **Peter Mugambi -** Director Corporate Services
46 **Canisius Kanangire -** Executive Director
47 **Verenardo Meeme -** Program Officer - OFAB
48 **Millicent Sedi -** Program Officer - Agribusiness Development
49 **Luiz Silva -** Transgenic Seed Expert

Investors and partners

Investors

Partners

List of abbreviations and acronyms

ABU	Ahmadu Bello University
AFAAS	African Forum for Agricultural Advisory Services
AfDB	African Development Bank
AfS	Alliance for Science
AFSTA	African Seed Trade Association
AUDA-NEPAD	African Union Development Agency
CAADP	Comprehensive Africa Agriculture Development Programme
CAR	Central African Republic
CBA	Cost Benefit Analysis
CJED	Calestous Juma Executive Dialogue
CORAF	West and Central African Council for Agricultural Research and Development
DRC	Democratic Republic of Congo
DUS	Distinctness, Uniformity and Stability
EAC	East African Community
ECOWAS	Economic Community of West African States
EGS	Early Generation Seeds
ESoBS	Ethiopian Biosafety Society
EU	European Union
FANRPAN	Food, Agriculture and Natural Resources Policy Analysis Network
FAO	Food and Agriculture Organisation
FARA	Forum for Agricultural Research in Africa
FAW	Fall armyworm
GAPs	Good Agricultural Practices
GM	Genetic Modification
GMOs	Genetically Modified Organisms
IAR	Institute of Agricultural Research
ICRA	Central African Agricultural Research Institute
IITA	International Institute of Tropical Agriculture
IRM	Insect resistance management
KALRO	Kenya Agricultural and Livestock Research Organization
KEPHIS	Kenya Plant Health Inspectorate Service
MLTs	Multi-location trials
NABDA	National Biotechnology Development Agency
NaCRRI	National Crops Resources Research Institute
NAERLS	National Agricultural Extension and Research Liaison Services
NASC	National Agricultural Seed Council
NBA	National Biosafety Agency
NBMA	National Biosafety Management Agency
NCST	National Commission for Science and Technology
NSA	Nutrition-Sensitive Agriculture
NSC	National Stewardship Committee
NPTC	National Performance Trials Committee
NPTs	National Performance Trials
OFAB	Open Forum for Agricultural Biotechnology
PBR	Pod Borer Resistant
QBS	QualiBasic Seed company
PVS	Participatory Variety Selection
RECs	Regional Economic Communities
SADC	Southern African Development Community
SEEDAN	Seed Entrepreneurs Association of Nigeria
SME	Small and medium enterprise
SPR	Seed Production Research
SSA	Sub-Saharan Africa
STAK	Seed Trade Association of Kenya
STI	Science, Technology and Innovation
TAAT	Technologies for African Agricultural Transformation
TI	Trait Integration
TWG	Technical Working Group
UN	United Nations
USDA-FAS	US Department of Agriculture-Foreign Agricultural Service
USTA	Uganda Seed Trade Association
VIRCA	Virus Resistant Cassava
WEMA	Water Efficient Maize for Africa


ATF

Technology Through Prosperity

HEADQUARTERS
ILRI Complex, 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