

Frequently Asked Questions



What is the African Agricultural Technology Foundation (AATF)?

AATF is a not-for-profit organisation dedicated to increasing the productivity of resource-poor farmers in Sub-Saharan Africa. Its mission is to improve food security and reduce poverty by providing smallholders with greater access to improved farming technologies and know-how. In pursuit of this mission, AATF's structure and operations draw on the best practices followed by both public- and private-sector institutions. AATF facilitates and promotes public/private partnerships whose purpose is to ensure that African farmers have access to agricultural technologies that improve their productivity. AATF is a registered charity under the laws of England and Wales and has been given a tax-exempt status in the USA. It is incorporated in Kenya and the UK and has been granted host country status by the Government of Kenya where it is headquartered.

What is AATF's core business?

The Foundation's core business is to link resource-poor smallholder farmers with the agricultural technologies they need to increase the productivity and profitability of their farming operations. The technologies promoted by AATF vary, depending on the priority needs identified by farmers, and can include chemical, mechanical, biological, and process solutions. AATF is well positioned to identify and negotiate access to the technologies that farmers need, but which are not readily available to them. The Foundation's main objectives are to:

- Work with stakeholders to clearly define the real needs of the region's smallholder farmers and identify opportunities to meet those needs through the royalty-free transfer and use of new and existing proprietary technologies;

- Ensure that the region's farmers gain effective and affordable access to practical agricultural tools, materials and know how;
- Facilitate the efforts of public and private agricultural research and development institutions working to develop and deliver useful products to farmers; and
- Create sustainable markets and enduring private-sector engagement in the development process.

How did AATF come into being?

AATF resulted from an extensive two-year consultative process, supported by The Rockefeller Foundation, which began in 2000 and involved a number of African, European and American stakeholders concerned with finding effective ways of bolstering food security in Sub-Saharan Africa. Using the Millennium Development Goals (MDGs) and national Poverty Reduction Strategy Papers (PRSPs) as their starting point, the stakeholders engaged in this dialogue sought to more clearly identify key problems related to agricultural development in the region, and specifically those affecting access to and delivery of agricultural technologies to farmers. A design advisory council made up of stakeholders from African agricultural research institutes, the Consultative Group on International Agricultural Research (CGIAR), selected seed companies, organisations holding proprietary rights to potentially useful technologies, and donor organisations put together a framework for AATF's operation and its role in technology transfer.

Why does Sub-Saharan Africa need a technology transfer organisation like AATF?

Sub-Saharan Africa (SSA) has the highest hunger and malnutrition rates and the least productive agriculture in the world. Approximately one-third of the population is reported to lack food security – defined as having enough food to lead healthy and productive lives. Between 1980 and 1995, Sub-Saharan Africa was the only region to experience a decrease in crop production, with average yields falling by 8%. This compares to an increase of 27% in Asia and 12% in Latin America. Developments in agricultural science and technology hold out hope for major improvements in food security and poverty reduction in SSA. African national Poverty Reduction Strategy Papers (PRSPs), the New Partnership for Africa's Development (NEPAD), and the policies and plans of multilateral development agencies emphasise the need for Africa to access new and better agricultural technologies. Some of these technologies – some of which are proprietary – can be readily adapted to the agro-ecological conditions in the region and made available to poor farmers to improve production systems, as well as agricultural trade and commerce, and in turn stimulate broader and more equitable economic growth on a sustainable basis. But this technology adaptation and transfer process requires an advocate – one that represents the interests of all parties – and that is the role AATF has assumed.

What is the significance of AATF to Sub-Saharan Africa?

AATF provides an effective mechanism for negotiating access to and transfer of proprietary and other technologies held by public- and private-sector organisations anywhere in the world. The Foundation identifies and facilitates the transfer of the proprietary technologies needed by Africa's smallholder farmers in ways that address and resolve the legitimate concerns of technology providers and users. AATF assumes the role of the 'responsible party' in the technology transfer process and plays a key stewardship role in the development and deployment of the technologies. It also facilitates the creation of appropriate long-term networks to manage the deployment of these technologies at all stages in the value chain.



Nearly two-thirds of Africa's poor people live in rural areas and depend on agriculture for their survival. However, low and often declining farm-level productivity is a major cause of persistently low incomes and hunger. Agricultural science and improved technologies have, over the past 50 years, made a huge positive impact on poverty and hunger in the developing world, but mainly in Asia and Latin America – Africa has yet to realise the full potential that agricultural science has to offer. While this potential is very real, neither public nor privately owned agricultural research and development organisations can, on their own, readily capitalise on it.

International life science companies hold the rights to a majority of the new agricultural intellectual property, and have developed innovative technologies, processes and products that can be readily adapted to improve the productivity of African farmers. However, they have little commercial incentive to do so. These companies are compelled to focus on larger markets, due to the high costs of product identification, development and testing, regulatory approval, manufacture and market development. They have little interest in crops grown and consumed only in African countries, where markets are small and growth potential is seen to be limited.

On the other hand, public sector agricultural research and development organisations in developing countries have considerable knowledge about local crop varieties, farming methods, and the needs of resource-poor farmers. Research institutions working on minor crops or on crops that are of crucial importance to the poor – but for which there are limited markets – usually rely on public funding. These organisations are thus often constrained in what they can do by low and uncertain government funding. Moreover, they normally have limited access to proprietary and other technologies owned by private and public sector institutions in developed and developing countries.

What makes AATF unique?

AATF is unique in several ways:

- It provides a much-needed 'one-stop-shop' for enabling access to proprietary technologies, knowledge and know-how;
- It serves as an "honest broker" in negotiating the royalty-free transfer of technologies held by advanced public and private research institutes in developed and developing countries;
- It works all along the product value chain, from basic research, through adaptive research and development, distribution, production and marketing; and
- The Foundation uses its convening power to bring together diverse potential partners from the public and private sectors, and in so doing serves as a catalyst for innovations, reforms and the creation of agricultural markets.

Who does AATF work with?

AATF places great emphasis on partnerships. In pursuing its mission and objectives, AATF collaborates with the many stakeholders involved in agricultural development in Sub-Saharan Africa. It fosters the creation of new public/private partnerships and networks that address food security, poverty reduction, market development and economic growth. The Foundation works with its many partners to identify, acquire, adapt and deliver improved appropriate agricultural technologies to resource-poor farmers. Current AATF partners include African Governments (Kenya, Uganda, Tanzania, Nigeria), farmers, agricultural producers and consumers, regional and national agricultural institutions and agencies such as FARA, ASARECA, CORAF, KARI (Kenya) NARO and UNCST (Uganda), COSTECH (Tanzania), IAR, ARCN and NABDA (Nigeria), sub-regional organisations, international institutions and agencies such as CIMMYT, IITA, TSBF-CIAT, local and international NGOs, agri-business entities in addition to development investors and agricultural intellectual property holders such as Monsanto, BASF, Academia Sinica and Arcadia Biosciences.

Is technology transfer the 'magic bullet' that will solve Sub-Saharan Africa's agricultural problems?

Advanced agricultural technologies by themselves alone will not address Sub-Saharan Africa's food productivity and associated socio-economic and infrastructural problems. The region's smallholder farmers' problems will not be resolved only through technology transfer interventions. There are other factors that affect food production and availability, including policies, institutional capacities, and marketing and distribution channels. The important thing is that these have been recognised by African governments and are being addressed in collaboration with other partners. However, there are modern agricultural technologies that offer hope for harvesting crops even in the face of drought, impoverished soils, and diseases and pests – some of the most important constraints limiting smallholder productivity today. Where productivity constraints are related to technology transfer barriers, AATF will contribute to access and delivery.

What is AATF's position on Genetically Modified Organisms?

Genetically modified organisms (GMOs) certainly provide one of many solutions that farmers could use to increase their productivity. The use of GMOs has invoked emotive debates from several quarters, but AATF's approach (and its advice to others) is to avoid generalisations or blanket descriptions that depict GMOs, and indeed science in general, as either good or bad. As with all significant decisions made by governments, and given Africa's urgent need to increase agricultural productivity, policy makers must consider the options available and carefully weigh the risks and benefits associated with them before taking action. One of AATF's major contributions is to provide partners and stakeholders with as much information as possible regarding these risks and benefits. In identifying solutions available for farmers, the Foundation is committed to ensuring full and rigorous testing and regulatory compliance of all technologies intended for use by smallholder farmers. Environmental protection, health, food and biosafety standards will not be compromised.

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What are royalty-free technology transfers, how are they done, and why would for-profit companies be interested in making them?

Royalties are usually calculated as a percentage of gross or net profit, or a fixed amount per sale, that owners of intellectual property rights are entitled to receive by contract. In negotiating access to technologies, AATF signs legal agreements that ensure products developed using the technologies are licensed to AATF, and the Foundation in turn makes them available to smallholder farmers without royalty charges.

The process begins by identifying with farmers, as well as with agricultural development organisations, the priority problems that need to be resolved. AATF then consults with technology holders to determine which technologies would be the most appropriate and effective for addressing the identified farmers' priorities. Acting as an intermediary, AATF negotiates with technology owners on behalf of the eventual beneficiaries and, if successful, it enters into licensing agreements that allow it to access and use the proprietary technology. The Foundation then makes contractual agreements with institutions in the region and elsewhere for further research, adaptation and dissemination. As the responsible partner in these relationships, AATF monitors compliance with the requirements of the agreements to protect the interests of users and technology owners alike. In this way, AATF facilitates the formation of public/private partnerships that drive the transfer and use of proprietary technologies by Africa's resource-poor smallholders. While the motivations underlying the actions of the different partners may vary, they share a common

interest in helping to reduce food insecurity and poverty across the continent, as well as in improving the commercial viability of African agriculture.

Which institutional channels does AATF use to distribute new technologies to ensure that they reach and benefit smallholder farmers?

National agricultural research and development institutions, government extension services, NGOs, seed companies, and farmer co-operatives and associations are key partners in making sure that the technologies reach farmers. Where necessary, AATF supports the dissemination of new technologies by supporting seed production, as well as farmer awareness and educational activities, to ensure that farmers are able to gain access at a reasonable cost.

What are the current priority problem areas that AATF is addressing?

AATF has so far defined as priority targets for its intervention the control of destructive weeds and insect pests in staple food crops, such as maize and cowpea; the improvement of nutritional quality in cereals; the improvement of banana, plantain and cassava productivity; the control of mycotoxins in food grains; and the alleviation of drought in cereals. These are common problems encountered by millions of smallholder producers over a wide geographic area in Sub-Saharan Africa.

How were the problem areas that AATF is addressing established?

AATF's priorities are based on the results of national and regional surveys that have identified the most urgent problems facing farmers. AATF works with its partners and stakeholders in a systematic and demand driven process to select specific projects for implementation. Selected projects must address high-priority productivity constraints that can be overcome by access to and use of new agricultural technologies. Projects are pursued only if it is clear that, in the target countries or region, constraints to sustainable and profitable technology use by smallholders are either being overcome or can be addressed in a reasonable timeframe and at a reasonable cost.

What projects is AATF currently implementing?

The Foundation is currently implementing five major projects, with several others in the pipeline:

Striga control in maize fields: Also known as witchweed, *Striga* is a parasitic weed that sucks nutrients from maize, reducing yields by up to 80%. AATF is promoting Imazapyr-resistant (StrigAway®) maize seed, which has been shown to be effective against the weed, among farmers in east and central Africa. AATF projects typically pass through three major phases: project formulation, product development, and product deployment. The *Striga* control project is in its deployment stage, and AATF is working with key partners and a wide range of stakeholders to encourage farmers to test and adopt the technology.

Developing Maruca-resistant cowpea varieties: The project aims at enabling smallholder farmers in Sub-Saharan Africa have access to preferred cowpea varieties with resistance to the insect pest pod borer, *Maruca vitrata*. This project is at an advanced product development stage and is undergoing field testing of *Maruca*-resistant seed under controlled conditions.

Improving banana resistance to banana bacterial wilt: In 2001, the banana bacterial wilt disease broke out in Uganda. It rapidly spread across eastern Africa and now threatens production of banana in the Great Lakes region. In this project – which is still in its product development phase – AATF and its partners are working to develop high-yielding bananas resistant to the deadly disease.

Water Efficient Maize for Africa (WEMA): Africa is a drought-prone continent, making farming risky for millions of small-scale farmers who rely on rainfall to grow their crops. This project aims to develop new drought-tolerant maize varieties that are

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well adapted to African agro-ecologies. Considerable work has been done to develop potentially viable products and this project is at an advanced product development stage preparing for field tests under controlled conditions.

Rice varieties with enhanced nitrogen use efficiency and salt tolerance: This project, which is in its product development stage, aims to develop rice varieties suitable for soils that are low in nitrogen and those that have a high salt content.

Pipeline projects: Several project concepts are in the pipeline. Concept papers have been developed for two of these, one on the control of aflatoxin poisoning in peanuts and maize, and another on mechanisation of cassava production and utilisation.

What is the anticipated impact of AATF's interventions?

The ultimate goal of AATF interventions is to improve agricultural productivity and contribute to better livelihoods of smallholder farmers through access and use of appropriate technologies. All of AATF's projects aim at addressing particular constraints and reversing the negative impacts.

Taking **Striga control in maize fields** as an example, conservative estimates show that when fully adopted in Kenya – where about 210,000 ha of land are infested with the weed – the proposed technology (IR maize) will lead to an extra 62,000 mt of maize with a value of about US\$11.2 million at current prices. Data from on-farm trials in Kenya indicate that average yields of the technology have increased from 500 kg/ha (valued at about US\$155) to 3,000 kg/ha (worth about US\$920). The expected net benefit-to-cost ratio for the use of IR maize for an average farmer is around 45:1, a return

of 45%. Moreover, because using the technology reduces the weed seed bank over time, abandoned farmland can be recovered and once again cultivated. The results being achieved in Kenya will be replicated in other countries where *Striga* has similar negative impacts on crop productivity through collaborative networks involving the respective national agricultural research institutes.

With regards to developing **Maruca-resistant cowpea varieties**, baseline studies and ex-ante impact assessments indicate yields will increase from 0.35 t/ha (without insecticides) to about 0.5 t/ha. This represents an anticipated yield increase of 20-40%. It is estimated that using improved, insect-resistant cowpea varieties will increase net farm-level profits by about 40%. This will mainly be due to a decrease in *Maruca* destruction and reduced use of expensive chemical pesticides. Health benefits will accrue from the expected reduction in the use of insecticides, and while difficult to measure, the costs associated with harmful environmental impacts of insecticide use will also decline.

What are resource-poor smallholder farmers going to gain from AATF's efforts?

Because of AATF's work, farmers can eventually expect higher yields from their most important staple crops, including maize, cowpeas, bananas, rice and cassava. This will lead to improvements in food security, both at the household and national level. The higher yields will also potentially contribute to higher incomes and improved livelihoods, as farmers market the extra produce.

What is the size of AATF?

AATF is a small organisation currently made up of ten managers, recruited from various African countries, and about twelve locally recruited support staff. The Foundation's business plan envisions maintaining a small, highly focussed organisation that will work with networks around Africa to ensure that national needs are addressed and professional handling of licensed technologies is ensured. To better coordinate its work in West Africa, AATF will soon be opening a regional office in Abuja, Nigeria.

Who are AATF's main investors?

The Rockefeller Foundation, the United States Agency for International Development (USAID) and the United Kingdom's Department for International Development (DFID) provided financial support for the design and start-up of AATF activities. These donors still remain the core investors of AATF. Recently, the Bill & Melinda Gates Foundation and the Howard G. Buffet Foundation provided significant project funding to address drought in maize.

Is there sufficient goodwill for AATF to succeed?

Among its partners and stakeholders, there clearly exists a great deal of goodwill for the kind of work that AATF is engaged in. But AATF will need more than goodwill to succeed in addressing the problems of food security and poverty. About half of Africa's population – and fully two-thirds of those living in rural areas – survive on less than a dollar per day. There is a rapidly growing recognition across the continent, and indeed around the world, that to overcome the twin challenges of poverty and food security – which in turn impede development in many other dimensions – Africa must move millions of her smallholder farmers out of subsistence agriculture and towards farming on a commercial basis. Success in doing so is in the best interests of AATF's partners and stakeholders, all of whom recognise the critical role of technology transfer in developing Africa's agriculture.

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