# African Agricultural Technology Foundation

## PROJECT 1: *Striga* control in maize – managing a cereal killer

### Background

*Striga* (witchweed) is a parasitic weed that seriously constrains the productivity of staples such as maize, sorghum, millet and upland rice in Sub-Saharan Africa. The weed survives by siphoning off water and nutrients from the crops for its own growth. It causes serious damage to its host crop before emerging from the soil by producing phytotoxins which are harmful to the host crop. Upon attachment to host roots, it withdraws photosynthate, minerals and water, resulting in characteristic "witch" appearance of the host crop manifested by stunting and withering. *Striga* infests as much as 40 million hectares of smallholder farmland in the region and causes yield losses ranging from 20–80% and even total crop failure in severe infestation. *Striga* seeds remain dormant and viable in the soil for up to 20 years. With every planting season, some of the dormant seeds, stimulated by crop exudates, germinate and infest the host crop while reproducing and increasing the *Striga* seeds in the soil thus escalating the problem. AATF is collaborating in a public/private sector partnership project to promote technological interventions for the control of *Striga* in maize in Africa.

### Objective

To enable smallholder farmers in Sub-Saharan Africa have access to appropriate *Striga* management technologies such as seed of Imazapyr-resistant (IR) maize, *Striga* tolerant varieties, suppression and trap cropping management systems and soil fertility management.

### The problem

The damage caused annually by *Striga* in Sub-Saharan Africa is estimated at US$ 1 billion, affecting the livelihoods of more than 100 million people. Fifteen countries of eastern, southern and western Africa account for 95% of the continent's *Striga* infested fields.

### The solution

The product combines a low-dose Imazapyr seed coating applied to Imazapyr-resistant (IR) maize seed. Small quantities of Imazapyr (as little as 30 g/ha) act before or at the time of *Striga* attachment to the maize root and so prevent the phytotoxic effect of *Striga* on the maize plant, thus enabling the plant to grow to its full potential. Additionally, Imazapyr that is not absorbed by the maize seedling diffuses into the surrounding soil and kills ungerminated *Striga* seeds. This technology for controlling *Striga* is referred to as STRIGAWAY® technology. The low-dose herbicide seed dressing used in the STRIGAWAY® technology controls *Striga* without impacting sensitive intercrops when planted 10cm away from the maize hills. This allows smallholder farmers who practice intercropping to incorporate this technology in their farming systems. In deployment of *Striga* management technologies, AATF encourages farmers to incorporate soil fertility practices such as use of legume rotation and intercrops and fertiliser additions to replenish soil nutrients and optimise crop yields.

### Benefits

The use of IR-Maize technology to control *Striga* leads to yields 38–82% higher than those currently obtained from traditional maize varieties. In Kenya, a conservative estimate indicates that when adopted, the proposed technology will lead to an extra 62,000 tonnes of maize in Western Province alone. This translates to US$ 5.3 million per year using the 2002 estimates of farm-gate price for maize in Kenya.

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**AATF interventions**

- Facilitating negotiations for release of herbicide-resistant maize seed
- Development and implementation of a technology stewardship plan focused on seed stockists and maize farmers
- Facilitate testing of improved soil fertility management solutions
- Facilitating herbicide registration process
- Facilitating baseline studies to benchmark *Striga* incidences and adoption studies to evaluate technology uptake and use

**Partner institutions**

*International*

- CIMMYT – International Maize and Wheat Improvement Centre
- BASF – A private chemical company
- Weizmann Institute of Science, Israel
- TSBF-CIAT – Tropical Soil Biology and Fertility Program of the International Centre for Tropical Agriculture
- IITA – International Institute of Tropical Agriculture

*Kenya*

- KARI – Kenya Agricultural Research Institute
- Ministry of Agriculture
- WeRATE – The Western Regional Alliance for Technology Evaluation: A consortium of NGOs, community based organisations and farmers' organisations
- Local private seed companies – Western Seed, Lagrotech and Kenya Seed

*Uganda*

- NARO – National Agricultural Research Organisation
- FICA – Farm Inputs Care Centre Ltd
- Africa 2000 Network
- NAADS – National Agricultural Advisory Services

*Tanzania*

- Ministry of Agriculture
- Tanseed International Ltd
- ARI – Agricultural Research Institute, Mwanza

*Malawi*

- University of Malawi, Bunda College
- Zum Seed Ltd
- Ministry of Agriculture
- Chitedze Research Station

**AATF is a not-for-profit Foundation designed to facilitate and promote public/private partnerships for the access and delivery of proprietary agricultural technologies for use by resource-poor smallholder farmers in Sub-Saharan Africa. 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 in the UK and has been granted host country status by the Government of Kenya where it is headquartered.**

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