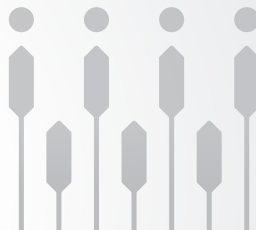


changing farming for
a changing climate

Adam Smith
International



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INFORMATION BRIEF:

Smallholder access to drought-tolerant seed

This information brief highlights key findings of the Vuna report “Reaching More Farmers with High-Quality Seed for Drought Tolerant Crops,” by Aline O’Connor and Mulemia Maina of AgriExperience (October 2016).



Key points

- Crop yields in Sub-Saharan Africa remain below global averages and could decline further because of climate change.
- Yields are lagging because the supply of high-quality seed is inadequate, and because seed distribution systems are not capable of reaching all farmers.
- Governments and donors have introduced a broad array of measures to address this supply gap, but these efforts have not substantially improved the situation.
- Future efforts should be directed toward strengthening the private sector, improving coordination of donor support, assuring that government interventions are more market-friendly, and improving data collection for seed-supply monitoring.

Introduction

In the past 50 years, agricultural yields have increased significantly in industrialised economies and in most developing countries, thanks to the Green Revolution. Yields in Sub-Saharan Africa (SSA), however, have remained stagnant—largely due to a lack of access to high-quality seed (Tittonell and Giller, 2013). These yields are at risk of declining further because of the rising temperatures and increased variability of rainfall associated with climate change (Challinor et al., 2014).

This study assesses smallholder farmer access to modern varieties of drought-tolerant seeds in the five Vuna focus countries: Malawi, Mozambique, Tanzania, Zambia, and Zimbabwe. Vuna—a climate-smart agriculture programme funded by the United Kingdom’s Department for International Development and implemented

by Adam Smith International—focuses on crops that will become increasingly important under a changing climate: sorghum, pearl millet, cowpea, pigeonpea, groundnut, and open-pollinated variety (OPV) maize. The report relied on a literature review and field visits to each country.

Evidence suggests that farmers are willing to buy high-quality seed of modern varieties of climate-smart crops, but that supply is often lacking. Table 1 illustrates this supply gap.

Table 1: FAO estimate of seed availability and demand for 2016-17 (in metric tonnes)

Country		Maize	Cowpea	Groundnut	Sorghum
Malawi	Availability	17,130	325	2,106	N/A
	Requirements	32,935	1,287	9,599	N/A
	Deficit / surplus	-15,805	-962	-7,493	N/A
	Deficit / surplus (%)	-48	-75	-78	N/A
Mozambique	Availability	1,330	84	78	2
	Requirements	9,245	1,849	1,387	2,850
	Deficit / surplus	-7,915	-1,765	-1,309	-2,848
	Deficit / surplus (%)	-86	-95	-94	-100
Zambia	Availability	77,885	400	751	478
	Requirements	27,465	108	17,836	233
	Deficit / surplus	50,420	292	-17,085	49
	Deficit / surplus (%)	184	270	-96	21
Zimbabwe	Availability	44,152	310	110	1,300
	Requirements	37,500	4,000	2,500	2,500
	Deficit / surplus	6,652	-3,690	-2,390	-1,200
	Deficit / surplus (%)	18	-92	-96	-48
Total - four countries	Availability	140,497	1,119	3,045	1,780
	Requirements	107,145	7,244	31,322	5,583
	Total deficit / surplus	33,352	-6,125	-28,277	-3,803
	Total deficit / surplus (%)	31	-85	-90	-68

**Note: Tanzania was not included in FAO assessment; "requirement" figures were based on government projections or historical averages of area planted.*

Source: FAO assessment on seed (2016)

The aim of this report is to understand why there is still such a large seed supply gap and to assess efforts to narrow it.

Recent efforts

Many attempts have been made to improve seed availability among smallholder farmers in SSA. Governments and NGOs have supported public and private-sector seed production, seed delivery through input-subsidy programmes, seed production and sale by community groups, and sale of small seed packs. They have also provided funding and technical support to promote small-scale seed companies.

These efforts have produced some progress over the last couple of decades: the release of hundreds of new varieties of the target crops; commercial production of many of these varieties; the founding of more private seed companies; and the establishment of many community-based seed production groups.



Sub-Saharan Africa still faces major constraints in seed supply.



Despite all of these interventions, the discouraging fact remains: Sub-Saharan Africa still faces major constraints in seed supply. Producing and selling OPV seed varieties generally offers a low and uncertain profit margin, making them an unattractive business proposition for

larger commercial seed companies especially by comparison with the strong market for hybrid maize. While government and NGO seed subsidies have encouraged expanded production of OPV seed, there is still a limited commitment to seed supply of crops other than maize. Production of other types of seeds by community groups has fallen short of expectations because of their lack of facilities for seed processing and storage, concerns about the purity of their production, and difficulties in marketing.

Smaller companies have shown a greater willingness to partner with NGOs and research centres to produce and market a wider range of varieties of the target crops. Thanks to their smaller overheads, these companies are able to pursue smaller market niches that are of limited interest to large multinational corporations. The key recommendation of this study is that donors and governments should invest in strengthening the formal private sector especially small-scale commercial seed companies for seed supply and distribution.

Future efforts

This report's recommendations fall into three broad categories:

The need to continue efforts to strengthen private-sector seed supply systems. This will require: (a) providing technical support to younger companies as they develop the ability to produce high-quality seed; (b) making working capital available at affordable rates; (c) ensuring that subsidies and other donor or government-funded programs support rather than undermine the development of seed supply through the private sector; (d) clarifying how the use of multiple seed classes (such as certified, standard, and quality-declared seed) can be used to improve access to high-quality seed while avoiding unnecessary regulatory costs and burdens; (e) and coordinating innovative marketing and promotion for a wider array of new varieties of drought-tolerant crops, such as through combinations of radio advertising, small-pack distribution, and crop demonstrations.

The need to better coordinate public-sector support for seed supply in ways that reinforce the development of broader commercial seed systems. There is substantial scope for better coordinating the broad range of public-sector and NGO support for seed-sector development. Efforts include many government initiatives to produce and subsidise seed, as well as many donor and NGO projects aiming to speed multiplication and develop seed markets. The diversity of these initiatives—and the fact that they are often short-term—can undermine the sustained development of national seed systems. There is also a risk that commercial companies pursuing public funds are left unprofitable when such projects disappear. Governments and donors need to work together to pursue a common long-term program for sector development.

The need to improve data collection and monitoring systems. Roughly 48% of the more than 200 varieties of the target crops released in the focus countries through 2015 are believed to have been commercialised. Little is known, however, about how this relates to seed production levels and the availability of seed to farmers throughout each country. Data on seed adoption rates are grossly incomplete. Anecdotal evidence suggests the majority of farmers still lack access to most of the new varieties. Many rural communities have access only to maize seed. Few retail shops sell seed of sorghum, pearl millet, cowpea, groundnut, pigeonpea, and other relatively more drought-tolerant

crops. Significant donor and government funding is being invested in the development of new varieties of these crops—but then these varieties never make it into the hands of most farmers. The targeting of continuing investments in seed systems development needs to be informed by improved data systems. This will allow governments to monitor the flow of new varieties—from release to multiplication, sale, and adoption.

References

- Challinor A.J., Watson, J., Lobell, D.B., Howden, S.M., Smith, D.R., & Chhetri, N. (2014). A meta-analysis of crop yield under climate change and adaptation. *Nature Climate Change* 4: 287-291.
- The Food and Agriculture Organization of the United Nations (FAO), The United States Agency for International Development (USAID) and The International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) (2016). Preliminary findings of stakeholders' workshop (Johannesburg, South Africa, 4-5 August 2016) on the status of the seed supply and requirements situation in Southern Africa. 2-4
- Tittonell, P. & Giller, K.E. (2013). When yield gaps are poverty traps: The paradigm of ecological intensification in African smallholder agriculture. *Field Crops Research* 143: 76-90.

