

Market transformation of African agriculture

“Making the business of plant breeding more responsive to changing market demands”

African agriculture is changing and new markets are emerging. There have been generations of farming based on dependence and subsistence, in which the exercise of choice in markets had to take second place to the urgency of food security.

Production needs to meet these new market demands and customers’ changing preferences. Technology to create new and improved crop varieties is the solution. The last 15 years have seen an acceleration in the genomics and information technology revolution. Scientists and donors have tended to focus predominantly on capacity building in technology. Breeders concentrate on seeking new variety registrations, based mainly on consultations with farmers. Typically, the public sector has put much less emphasis on the importance of understanding markets and their requirements in order to target research and technology use.

A group of Pan-African educators has recognized the need to address plant breeders’ lack of knowledge and expertise about markets and drivers. They have been working together since end-2014 to find the best practices in both the public and private sectors. They have created a “state-of-the-art” education module for use in PhD, MSc and continual professional development programs. Its aim is to train the next generation of African breeders on how to serve both farmers and their markets.

Meet the Pan-African educators’ group and read their views

On the same website page as this introduction you will find a series of profiles. The experts featured here are creating a new wave of demand-led and market-focused plant breeders in Sub-Saharan Africa. Each is a leading African educator, breeder and researcher, and brings a combined network of expertise from both public and private sectors from within Africa and internationally. Between them, they are located in Ghana, Kenya, Tanzania, Uganda, Rwanda, Malawi, South Africa, Australia, USA and Switzerland. They are opinion-formers, and instrumental in educating the next generation of plant breeders in Africa. They question the practices in established African crop improvement programs, and use demand-led best practices in their daily work.

There is a palpable sense of enthusiasm and excitement amongst both them and students at their institutions. This enthusiasm comes from a confidence that the work is catalytic, scalable and of benefit not only to their programs, but also the region as a whole. They believe Africa will make progress when Africans can forge their own path and lead the transformation. This ‘demand-led breeding’ project is an example of that process at local grass-roots level.

Pan-African educators group Demand-led breeding



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The core components of the demand-led breeding module include:

1. **Customer definition** – Understanding customers and their markets
2. **Future landscape for new varieties** - Customer tastes and market requirements can change quicker than the “10-year+” development cycle of a new variety. Breeders must be able to anticipate demand by visioning and using forecasting methods, understanding market drivers, and using best practices in market research
3. **New variety design and crop value chains** - Designing new varieties to take into account all the requirements of players in crop value chains. As well as farmers, these include processors, packagers and canners, transporters, storage operators, retailers and consumers
4. **Development timescales and risk management** – Planning and risk management to ensure delivery of new varieties on time and to R&D budget
5. **Making the investment case** – Exploring the full width of benefits and costs to undertake plant breeding programs focused on delivering new varieties for farmers and their markets
6. **Team working** – Broadening the conventional scope of programs to be consultative and inclusive of all the skills, knowledge and expertise required. These come from scientific disciplines, crop value market chains, market researchers, economists, social scientists, private sector business managers, environmental, biodiversity and climate specialists, public officials and policy makers.

The role of plant breeders is now much more than just managing crossings or selection programs. A breeder must integrate and make sense of information from a very wide range of sources such as those above. Demand-led breeding requires them to heed the surveyed preferences of urban

consumers as well as those in rural communities. This is all in addition to keeping abreast of advances in breeding methods and using biodiversity.

There are nowhere near enough breeders to assure the future of modern African agriculture. Many more are needed as Africa's population continues to rise fast. This has been recognized, and three regional flagship institutions are educating the next generation of breeders:

WACCI (West African Centre for Crop Improvement), University of Ghana, Accra
ACCI (African Centre for Crop Improvement) Kwa-Zulu Natal University, South Africa
Makerere University, Uganda.

Their alumni of over 250 professionals are harbingers of the African Green Revolution. As intended, virtually all graduates since 2007 have either gone to help their national programs or moved into agribusiness and seed organizations. They are starting to create a stable legacy of the knowledge and experience needed for the assurance of food and nutritional security in Africa.

Demand-led plant breeding will not resolve every problem. However, there is already enough evidence to suggest that more resources, more closely concentrated on appropriate practices, will substantially benefit the sustainability of African farming.

For African countries to drive their national agendas on sustainable agriculture, food security and greater self-determination, they need to be less dependent on the vagaries of international donors. Due to the timescales for designing and creating new varieties, crop breeding needs stability of expertise, finances and resources. Governments should provide the core funding necessary for their own crop improvement goals, and seek partnerships with the private sector and international investors.

This demand-led philosophy offers a way to connect key policymakers, officials, private sector, R&D leaders, educators and international donors to address their common challenge: stimulating African economic growth, investment and food security for all.