

TAA Forum

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Improving smallholder agriculture

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(compiled by Elizabeth Warham from Powerpoint presentation)



Dr Mike Bushell is the Principal Scientific Advisor for Syngenta, a world leader in plant science. Mike has a chemistry PhD from Liverpool and the University of California at Davis, and is a Fellow of the Royal Society of Chemistry. Following postdoctoral studies at Cambridge, he joined ICI in 1980, based at Jealott's Hill International Research Centre in Berkshire. He has held a variety of technical leadership and management roles over more than 30 years, including Head of R&T Projects, Head of Discovery, Head of External Partnerships, and Head of Jealott's Hill. He is also the secretary to the Syngenta Technology Advisory Board. Mike was recently appointed as a Visiting Professor at Nottingham University and to the Board of Trustees for the SCI.

Summary

The world's population is increasing and by 2050 there will be two billion more people on the planet. Food demand is already outstripping supply. Farmers must grow more from less so we need to help make that possible. This article highlights Syngenta's *The Good Growth Plan* with six commitments to help grow more food using fewer resources, while protecting nature, and at the same time helping people in rural communities live better lives. As part of this, Syngenta has made a commitment to creating a US\$1 billion business in Africa by 2022, contributing to the transformation of agriculture by increasing access to technology and enabling the development of rural communities. Several case studies illustrate the type of partnerships that Syngenta is using to improve smallholder agriculture in Africa.

Background

The challenge of feeding a growing population has been a subject of concern for centuries. Every day the world's population increases by 200,000 and 870 million people go to bed hungry with 70 percent of them depending on farming. Therefore, the global challenges of providing food, energy and water security for a population of 7 billion today, and 9 billion by 2050 are enormous. The key concept to addressing these challenges from the UK Governments *Foresight* report was sustainable intensification of agriculture, defined as producing more output from the same area of land while reducing the negative environmental impacts and using all inputs (including land, water and nutrients) more efficiently.

We need to act now to enable farmers to grow more food, so they can feed themselves and provide a reliable food supply to a growing urban population. Even today the use of natural resources is beyond what our planet can sustain, so productivity gains alone are not enough but must be part of a holistic view of the environment and the way farming is carried out.

Integrated systems approaches

Farmers must contend with many external environmental impacts including climate change and weather volatility, water scarcity and land degradation. Environmental stresses are increasing, with two thirds of the world's surface facing high or medium climate change. These global challenges make it an ever more changing environment for farmers to work in. Population growth and land scarcity will lead to the need for a further increase in people fed per hectare of land. So while one hectare could feed two people in 1950, by 2030 it will have to feed five.

Neither Syngenta nor indeed anybody else has all of the answers to meet the global challenges of food security, but collectively we can find the solutions. Breakthrough ideas and achievements come from collaborating beyond boundaries in strategic collaborations to deliver research and development, complementary technologies, better and safer farming practices, and an improved food value chain. In Syngenta, we continuously engage with stakeholders around the world to shape our understanding of the responsibility issues we must address in our everyday business. We need to further engage and collaborate with governments, NGOs, policy makers, food companies and others to make the "*New Vision of Agriculture*"

real. Syngenta encourages transparency and an open dialogue with governments and the independent research community on continuing research collaborations, and thinking about agricultural systems through mechanisation including irrigation, modern fertilisers, better seed varieties, and crop protection chemicals.

Farmers think about their land and their crops in a holistic, integrated way. By doing the same, we can equip ourselves to create truly innovative and transformative technologies focused on a crop rather than a specific scientific discipline. Syngenta is looking beyond single products and yield alone to create complete solutions that benefit both the land and the people who live on it (Figure 1).

Innovating across technologies to transform the way crops are grown

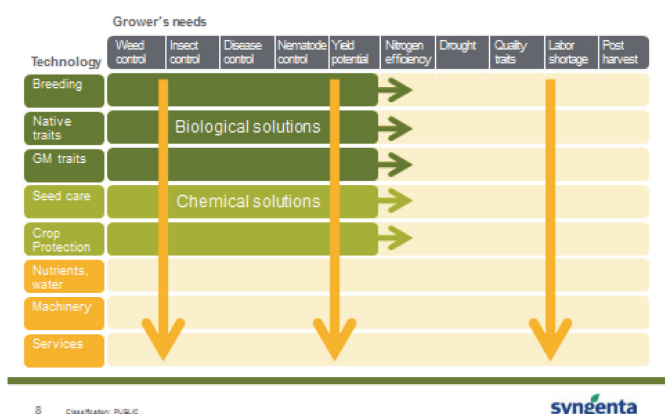


Figure 1. Holistic approaches can result in more appropriate technologies than a focus on specific disciplines

Thinking like a grower, Syngenta is one of the world's leading companies offering tailored agronomic solutions to growers. We look at farming from the ground up. By seeing things from the grower's perspective, crop by crop, we aim to combine technologies into innovative solutions that can transform the performance of farms large and small.

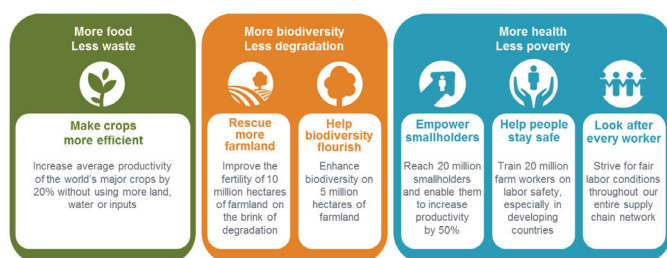


Figure 2. Syngenta's six-point Good Growth Plan

The Good Growth Plan

Syngenta's corporate advertising campaign: *The Good Growth Plan*, is about helping farmers feed a hungry planet¹. The research carried out to develop the plan highlighted some of the dilemmas farmers face in the pursuit of the goal of greater sustainability. Most respondents said that more arable land, water and human labour are needed. However, we need to ask what impact this would have on, for example, rainforests and natural parks; competition for other uses of water (household and business) given agriculture already uses 70 percent of the world's fresh water withdrawals; and the fact that many farmers are already unable to find the workers they need because of ongoing urbanisation.

In *The Good Growth Plan*, Syngenta has made six commitments to help grow more food using fewer resources, while protecting nature, and at the same time helping people in rural communities live better lives (Figure 2):

- **Make crops more efficient.** Syngenta will increase the average productivity of the world's major crops by 20 percent without using more land, water or inputs. This will grow more food with increases in yield without increasing the land area under cultivation or the volume of water and pesticides used.
- **Rescue more farmland and help biodiversity flourish.** Syngenta will improve the fertility of 10 million hectares of farmland currently on the brink of degradation through practices such as minimum tillage and crop rotation. The biodiversity on five million hectares of farmland will also be enhanced with the introduction of buffer strips and species protection programmes.
- **Improve health and reduce poverty among smallholder farmers, and improve worker safety.** Over the next seven years Syngenta aims to reach 20 million smallholders and to enable them to increase productivity by 50 percent. Syngenta will train 20 million farm workers, especially in developing countries, on labour safety, while looking after every worker by striving for fair labour conditions throughout our entire supply chain network.

Syngenta's progress on each of the six commitments will be monitored through on farm surveys and audited by third parties; with progress reported annually using a variety of different measures (Figure 3).

Measuring productivity and efficiency increases

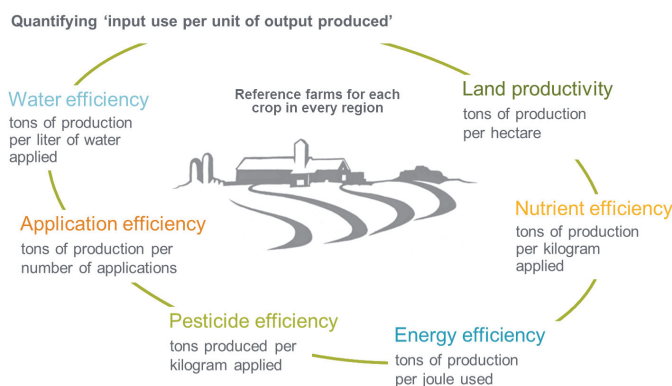


Figure 3. Monitoring the progress of the Good Growth Plan

Business development in Africa

Syngenta believes that Africa has the resources not only to feed its growing population, but also to become a major world food exporter. Syngenta announced at the 2012 G8 Summit a commitment to build a US\$1 billion business in Africa over the next 10 years (Figure 4). This involves investments of over US\$500 million; recruitment and training of up to 700 new employees; and an integrated approach given there is no single technology solution. Syngenta will also:

¹ Learn more at www.goodgrowthplan.com

- Act as an aggregator and catalyst to mobilise players along the value chain;
- Identify and develop business opportunities and business models that will accelerate the pace of African agricultural development;
- Validate business opportunities through the implementation of pilots and define blueprints to achieve scaling up of the model; and
- Complement the approach with acquisition or building pieces of the value chain outside of Syngenta's usual remit.

The acquisition of the Maize Research Institute (MRI) Seeds in Zambia will give Syngenta ownership of a leading and diverse portfolio of white corn germplasm with extensive production areas and contract grower relationships. This will create a corn seed hub to serve East African markets with additional opportunities in wheat and soybean. MRI is a leading distributor of both chemicals and seeds and will be a springboard for our growth throughout East Africa, allowing Syngenta not only to gain share but also to expand the market, including the introduction of integrated solutions.

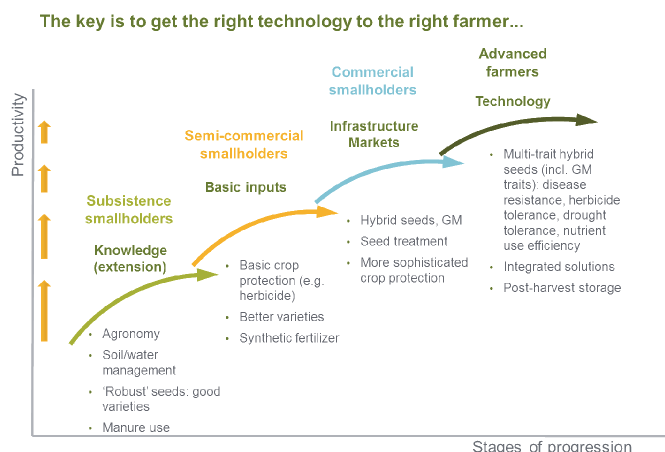


Figure 4. Syngenta's investment plan to raise the productivity of Africa's farms

Building on the success of the *Uwezo* project in Kenya (see Case Study 1), Syngenta are expanding the reach of their smallholder initiatives. These initiatives are customised to smallholder farmers to address their specific needs whether it be volume, quantity, size, price or channel (see Case Studies 2 and 3).

Case Study 1 - The Smallholder offer in Kenya

Project objectives - Smallholders account for 80 percent of Kenyan farmers. The *Uwezo* (or 'capability') project aims to help these farmers increase yield through access to crop protection products and extension services. Syngenta gains in higher sales and market share.

Business model - Since 2005, Syngenta has offered crop protection products for staple and high value export crops in affordable pack sizes that fit one knapsack sprayer and are priced for 'cash in pocket'. Seeds are also offered. Syngenta provides information and training to farmers through field teams and mass media, and trains retailers to enable them to provide better service and advice to the farmers.

Key achievements - Access to products and advice has enabled growers to increase their yield and income, and move from subsistence to commercial farming. In 2011, total sales for *Uwezo* were US\$ 4.64 million and 600 retailers have already been trained. The project has been introduced in Egypt and will be rolled out in an additional African country each year.

Case Study 2 - Southern Agricultural Growth Corridor of Tanzania (SAGCOT)

Project objectives - To support the development of large and smallholder farmers in the southern corridor of Tanzania. Building markets and infrastructure will facilitate Syngenta's operations in the area.

Business model - Since mid-2010, Syngenta has collaborated with the Tanzanian government, companies such as Yara and Unilever, and development agencies such as the World Bank and USAID, to develop the Southern Agriculture Growth Corridor of Tanzania (SAGCOT) for agricultural transformation in southern Tanzania. The current focus for Syngenta is working with the Kilombero Plantations Limited (KPL) rice plantation in the Kilombero valley. This includes supplying products to KPL and developing 5,000 smallholder farmers to increase their productivity and sell the rice produced to KPL. Innovations like weather-indexed input insurance are also being considered. Demo days are held on each of the sites at harvest time with 50-100 farmers from each community attending and the Syngenta/Yara protocol is explained.

Each of the 11 maize and rice sites selected compare Yara/Syngenta protocol with farmers' practice and the controlled maize and rice sites at Sokoine University of Agriculture in Morogoro; and Dakawa Research Institute, respectively.

Key achievements - A strong public-private partnership and investment blueprint has been developed by SAGCOT and a catalytic fund is being developed. The KPL partnership is being defined and deployed.

Case Study 3 – ‘Kilimo Salama’ in East Africa (Syngenta Foundation project)

Project objectives - To offer affordable, weather-indexed input insurance to Kenyan smallholders, enabling them to safely invest in better inputs, thereby increasing their yields and profitability. *Kilimo Salama* means ‘safe farming’ in Swahili.

Project model - Syngenta Foundation leads this project, with support from Syngenta and other partners including UAP Insurance and the Swiss Re Group. Smallholders can insure selected farm inputs at their local retailer and pay half the premium (input companies pay the rest). Retailers use a camera-phone to scan a bar code on each input and an SMS confirming the policy is instantly sent to the farmer’s cell phone. Local weather stations set up by the Foundation measure rainfall - if a station reports insufficient or too much rain in the season, affected farmers receive a payout via Safaricom’s mobile payment system MPesa. Currently the programme targets maize, wheat, sorghum, bean, potato and coffee farmers.

Key achievements – The pilot phase in 2009 insured 200 maize farmers. Given the drought at that time, farmers received a payout and saw instant benefits of insurance, reducing mistrust. In 2010, 11,000 farmers were insured in Kenya, rising to over 23,000 in 2011 and likely to be over 50,000 in 2012. In 2012 the project expanded to Rwanda where it currently insures over 13,000 farmers. The goal is to expand across Kenya as well as to other African countries.

Transforming rural livelihoods

There is no single big idea to transform rural livelihoods but more joined up thinking across the different stakeholders in the food supply value chain with a focus on:

- **Feeding the poor** - increasing access to affordable food, raising incomes, and growth in economies through agriculture and trade, while reducing demand for western diets and food waste.
- **Local knowledge and innovations** - empowering local communities with information and ‘local cooperatives’ blending new technology with traditional wisdom in local solutions, investing in agricultural extension, and making farming more professional and economically attractive.
- **Agriculture as more than food** - more research into sustainable production, food industry partnerships,

infrastructure investments, help for agricultural businesses to get capital, functioning input and output markets, and limiting climate change through genetics and crop husbandry.

- **Modern technology and systems biology approaches** to provide new traits to crop varieties and livestock breeds increasing productivity and quality; better control of weeds, pests, diseases, resistance, and safer storage; improving soil fertility to reverse yield stagnation; more efficient use of natural resources and inputs, land, nutrients and water; and higher standards to safety in use of modern crop protection chemicals.

In summary, national strategies are needed for food security and coordinating infrastructure investment and market development, and more supportive political climates. This will need improved decision support tools for land use locally, nationally and internationally to help improve smallholder livelihoods.