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Profitability, sustainability and risk

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INCREASING PRIVATE SECTOR ENGAGEMENT – FOUR DIFFERENT PERSPECTIVES

Partnerships for impact at scale

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Abstract



The presentation sets out the rationale, method and best practice of private-public cooperation in agriculture in developing countries and emerging markets. The focus is on product incubation and dissemination at scale through commercial channels to support sustainable intensification, diversification and farmers' access to markets. Much has happened since the Crawford Fund's 2009 conference on the role of the private sector. The presentation assesses the process and identifies gaps and opportunities ahead.

The last time I spoke from this lectern was in 2009. Thankfully the topic of feeding the world is on the agenda again – as it should be – and the topic of partnerships has been central. The topic of partnerships and the terms 'partnership' and 'cooperation', which will be replete in my presentation, have already been mentioned many times – rightly so, for reasons that I will also try to explain in my own way by referring to the world in which I work at the Syngenta Foundation for Sustainable Agriculture.

Food and agribusiness is the theme of the conference. It's represented by companies large and small the world over that have responded to the challenges and opportunities in the world food system with massive investment growth in the last 10 years. Secondly, food and agribusiness of course has a major economic, commercial, social and environmental footprint. And thirdly – and this is the real point that I want to make – is that it offers unprecedented opportunities for the rural sector in poor countries and emerging markets in the context of equally unprecedented food demand growth such as is projected for the remainder of the century.

Tapping into those opportunities and making them come true – in terms of food supply, rural incomes and a number of other dependent

variables and development indicators and so on – requires cooperation across the spectrum of the relevant stakeholders as I have mentioned earlier. A core purpose of this cooperation, and the one that I will be focusing on, is to build the agricultural markets that are absent or don't function well in many settings today. My presentation seeks to elaborate on this with particular reference on input markets and particular reference within that segment on seed markets, why those input markets are needed and how can they be built for impact at scale. I will start with reference to what is by now a classical insight on seed technology and markets in the USA some 80 years ago.

Fig. 1 displays the spread of hybrid maize. In the USA you see the S curves that are typical of successful adoption, whether we're talking about washing machines or improved varieties. I could have shown an S curve for the rate by which farmers adopted zero till agriculture in Western Australia between 1990 and 2010, it would have looked a little bit like some of these, not like the most aggressive one that corresponds to Iowa here but some of the more lagging ones. We've got an S shaped pattern of diffusion which is slow at first accelerating until it reaches a peak and then it slows as laggards enter.

The key aspect here, and that has everything to do with my message about markets, is that in this analysis which goes back to the classical paper by a U.S. agricultural economist (Griliches in 1960), geographic differences in the use of hybrid maize are explained by differences in the profitability of that use and as the profitability spread the seed industry engaged and produced varieties that were adoptable and useful for different agricultural regions. Now we've got exactly the same story much more recently in the case of Bt cotton in India, an illustration of the same phenomenon today (Fig. 2). Here too very rapid adoption, you see the S curve. By 2013, 7.3 million farmers grew Bt cotton on 11 million hectares in India and product developments which were demand-led and market-led (more about this towards the end of my presentation), and availability of locally adapted varieties were key in this episode.

Figure 1. Spread of hybrid maize in the USA, 1936–48.

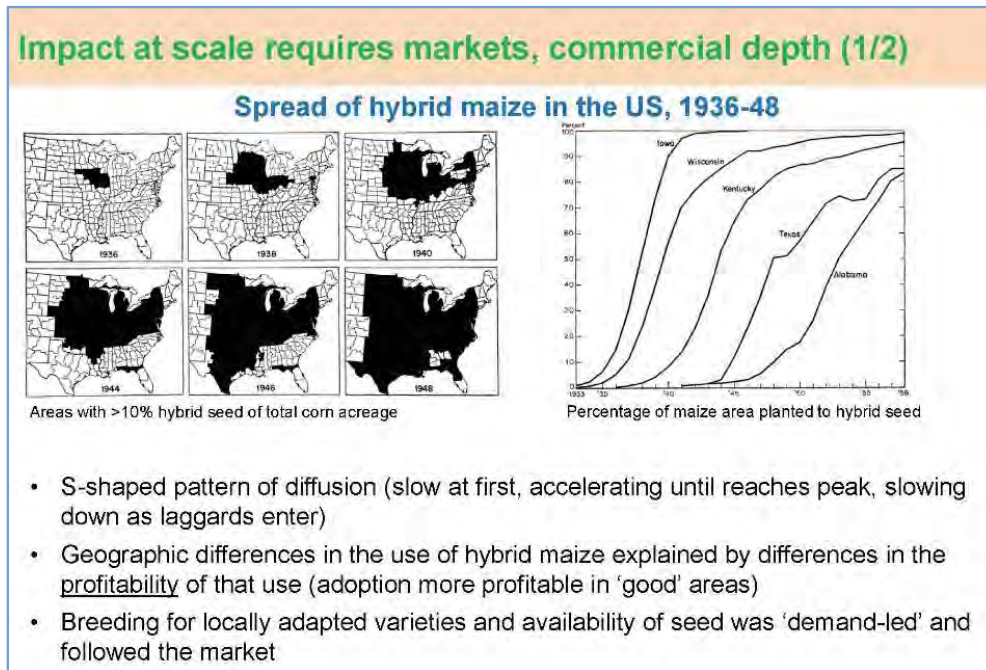
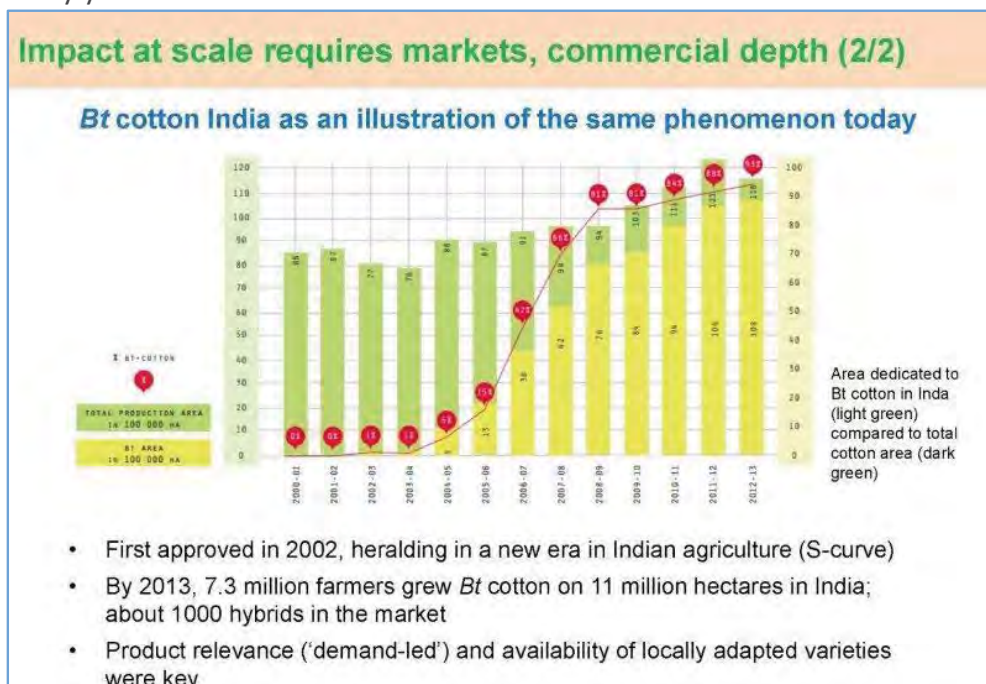


Figure 2. Adoption of Bt cotton in India – the same phenomenon as maize many years earlier.



Public/private task

Now what's the public/private task in this context? Historically the onset of sustained yield growth has been associated with the rise of the

private seed industry. In the U.S. the picture that I showed depicted subsequent different geographies later in life, later in the course of the 20th century. And in sub-Saharan Africa we have the last frontier in this respect, where it hasn't really happened yet, except in certain more advanced markets such as eastern southern Africa for maize; one of the drivers in more recent times behind that maize expansion is the demand for chickenfeed.

For a seed industry to emerge – and this is true for input industries, fertiliser, mechanisation tools and irrigation equipment, crop protection equipment and so on – a certain number of things are needed. Specifically in the first place public goods – I am not going to elaborate on this, I'm just going to highlight it as part of a caricature of the main issues. I will mention enablers of farm-level demand shortly.

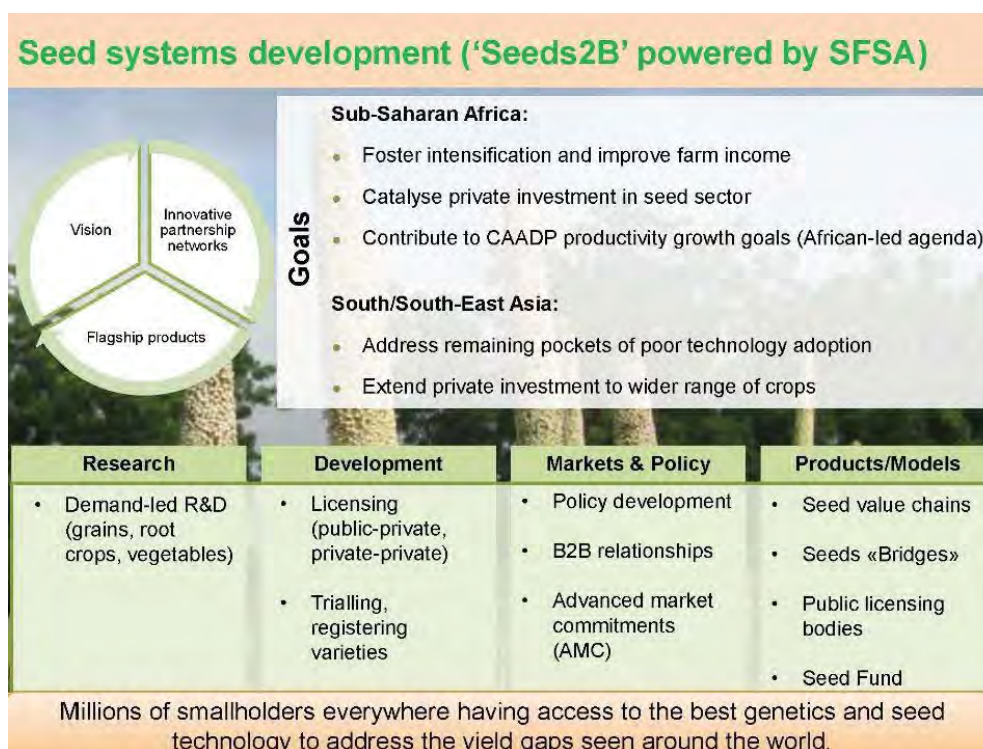
Public/private cooperation can kick-start markets, that's frequently what it's about, by addressing these institutional failures, the market failures that are typically present. Public/private cooperation also has a role in the functioning of value chains, in the creation of synergy in agricultural R&D. It also helps to shape social and environmental outcomes, because we know that markets left to their own devices do not necessarily deliver to society exactly the right outcomes. That's where governmental policy comes in, which is a form again of public/private cooperation, the right kind of regulatory system and so on.

Additionally, for seed markets specifically to develop (this actually applies to any input market), you need the right kinds of products. We need certain tricks or aspects of appropriability, otherwise the private sector cannot fulfil its goals of profitability which naturally go along with private sector activity (Fig. 3).

Enablers of farm-level demand

I now want to say something about the enablers of farm level demand. I was intrigued by the presentation about Sir John Crawford last night because, in preparation for this presentation, I also went a little bit into the annals of history and I learned more than I already knew about the World Bank mission to India in 1964/65 which Sir John of course took part in. You know he had the explicit major role of being the person in

Figure 3. Seed systems development – giving smallholders everywhere access to best genetics and seed technology.



charge of the agricultural dimension of that mission. And of course the agricultural dimension of that mission to India in the mid-1960s was probably 98 per cent of the mission, because agriculture was the economy of India. He says very clearly in the report that in addition to seed we need price support, public grain procurement, fertiliser imports and subsidies, agricultural credit, investment in irrigation and so on.

Those are the elements, the enablers that help create markets. Without those you will not have import markets. And of course I would add my own list to this list of enablers – property rights, land titles (very important), crop insurance was mentioned today already, information systems, digital decision tools and so on, agricultural extension, traceability, offtake arrangements and deals between buyers of products, offtakes and farmers, contract farming in that context. And of course the whole topic of farmer organisation is very important.

Crop insurance we have; our Foundation has developed a suite of new products in basically what we call index-based weather insurance, and

they're in the market now. In east Africa 250 farmers at least are going to be insured this year. And what we are learning is that crop insurance enables farmers to invest, actually we have had empirical survey data on that, we know that insured farmers invest. In the particular sample that I have in mind right now where we have the data, the differential is 20 per cent, that much more investment on the part of the insured relative to the uninsured control. What does that do in the context of my topic of input markets? It helps make input markets, because these farmers invest in fertiliser, seed and so on.

Role of the non-profits

Now what is the role of non-profits? In the world in which we operate it's about brokering public/private cooperation, and that has something to do with the fact that you need to understand certain things, you need to know the relevant actors, their skills, incentives, weaknesses, comparative advantages and then you need to be able to act, to invest, to listen, to convene and so on.

We have to consider the profit outlook, the sustainability and also the risk outlook, because in a world fraught with risk of agribusiness going forward implies the need for more brokering of corporate, for more cooperation and for more brokering of cooperation. The outlook is for continued incredible food demand growth. On the back of this we should be able to deliver rural development once and for all; and this is a new phenomenon – we have not had this before in the history of the planet. I'm old enough to know, when I started my career in agricultural economics the developing countries were all stagnant. The countries of Africa were stagnant for 30 years until they started to grow, we now have positive per capita growth since about the year 2000. India was stagnant until the mid-1990s. China became dynamic a little bit before that, and so on.

If you have a stagnating overall economy, forget rural development. The only answer for your rural population is subsistence farming and you know what subsistence farming is, a ticket into poverty, it is not a ticket for prosperity. And no farmer – small or large, male or female – has ever wanted to be a subsistence farmer. They have the same goals as you and I, they want to improve their situation. As farmers they know that

they're entrepreneurs, they have that in their blood and they want to sell and produce for the market while of course also producing for their own food needs.

Role of foundations

The role of foundations, in Syngenta Foundation we call it catalytic nudge. Here are three examples: seed systems, Triple M.A's demand-led plant variety design, these are examples of the many things that need to be done. Some of the things that we do have implications and generate dividends for the creation of functioning import markets, particularly with reference to Africa. Seed systems are the major market failure out there in Africa – in a sense that the interface between breeding which takes place in the public sector (such as it is) and seed production, bulking, treatment and salvage which is taking place (or should be taking place) in the private sector, that interface does not work.

So the Syngenta Foundation's program in seed sector development does actually six things. First, support breeding in the public/private space, in the public/private mode with an eye on the delivery of products to farmers. Second, offer licensing models to enable the progression of germplasm and products at various stages of completion from breeders to small-to-medium (SME) seed companies. Third, promote local seed production and value-chain development by intermediating and licensing technologies, aggregating farmer demand and providing basic business advice as well as intermediating finance for fledgling SME seed companies. Fourth, we operate a technology transfer platform which consists of, among other aspects of a trialling service, service agreements with IP owners and a variety of registration services. This year we'll be trialling 15 crops and 210 varieties in a number of settings in sub-Saharan Africa.

Point five, we work with public breeders and universities including five CGIAR centres to connect them to private sector delivery channels. Finally the sixth point, as part of this effort there is a policy analysis and advocacy component, because the seed regulatory systems are in need of some improvement – to say the least!

I will give you an example of one of those public/private partnerships – I’m sure Martin Kropff will be talking about this more. We have a collaboration that the Syngenta Foundation has brokered between CIMMYT and the maize R&D community in Syngenta to come up with a new generation of drought-tolerant maizes (Fig. 4). They’re affordable for the following reasons: they're not fancy single crosses, they’re triple crosses that are cheaper; they’re not the best top technology hybrids but they will still give you 80 or 90 per cent of the yield advantage of hybrids – and at a much lower price that makes them smallfarmer-affordable.

Figure 4. Partnership for breeding low-cost maize hybrids with improved dry-season yields.

Triple A maize
Accessible, Affordable, Asian



Partnership for breeding low-cost maize hybrids with improved dry-season yields



CIMMYT: Genetic diversity, field trialing network, experience in variety release

Syngenta: Molecular screening platforms, elite germplasm, performance assessment, product development

Syngenta Foundation: PPP models, royalty and IP ownership schemes; brokering function

→ *Distribution of new varieties through local seed companies*

So you can see what the various partners are contributing; from 2017 these hybrids will be going into 1.5 million hectares in south and Southeast Asia. We already have our eyes on eight to ten mid-tier seed companies that are beginning to voice interest in this particular product.

Market-responsive plant varieties

Lastly, I will touch on market responsive plant variety design. This is a program that we are doing together with the Crawford Fund and the

Food Security Centre of ACIAR). It's a partnership on what we call demand-led breeding. What we have postulated here is that one reason

why adoption in sub-Saharan Africa of improved varieties is so low is due to the lack of enablers for farmers, for example lack of access to credit and crop insurance.

Another dimension of the problem is that many of the available varieties, improved as they are, don't necessarily respond to exactly what the market needs and what the farmers need. They may have traits that perform well in terms of insect resistance or other biotic or abiotic stressors, but that may not be the real problem, and breeders in the public sector have not necessarily been trained to take advantage of or to heed the market signals and so on. So this program is about influencing ultimately the ecosystem of plant breeding in the public and the university sector in sub-Saharan Africa – to shift people's minds and allocate resources to actually work in the direction of more market-led market-responsive plant variety design.

I'll give you one example: tomatoes in Ghana (Fig. 5), where one of the problems is that even though it's the most important vegetable in Ghana (38 per cent of consumer spending on vegetables goes on tomatoes) there are three in-country processing plants that are currently not used. There is a lot of imported tomato paste from China and the EU, but there is a consumer demand for a differentiated fresh product, and then there is factory demand for processing to paste.

We do not have the right kinds of varieties to respond to these market opportunities. So we currently have a partnership between the three organisation that I have mentioned to develop the right kinds of market-based or responsive products that will at the same time have the traits that maybe needed – such as nematode resistance, yellow leaf virus tolerance and heat tolerance.

In conclusion

What's the conclusion to everything that I have been running through perhaps a little bit too fast? Markets are the vehicle for scaling up (Fig.



6). I got myself into deep trouble not long ago in Zurich at a meeting with a lot of NGOs where I stated: 'NGOs don't scale.' Now of course I'm

Figure 5. Lifting tomato production, processing and marketing in Ghana.

- **Tomato: Most important vegetable in Ghana (38% of spend on vegetables)**
- **3 in-country processing plants currently not used (capacity of 400,000 t/year)**
- **Import of tomato paste from China and EU (80,000 t/year)**

Consumer demand:

- Fresh produce (transport and shelf-life)
- Processing to paste
- Mini-tomatoes for premium markets



Tolerance traits:

- Heat
- Nematodes
- Yellow leaf curl virus

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Figure 6. Using markets as the vehicle for scaling up.

- Markets the 'vehicle' for scaling up
- Market development therefore essential, with implications for governmental action, aid agencies, the non-profit sector, business, civil society
- Enlightened cooperation across the relevant spectrum of actors indispensable
- The task: Get specific, tackle blockages, de-risk, build market pull, offer financing on the right terms, pursue shared value, reduce information asymmetry, support learning – all with a view to crowding in private investment and business

sure this is also controversial here and I'm not saying that no NGOs scale! But really, scaling as per my first two slides – Bt cotton India, hybrid corn the U.S. – and a lot of other evidence that I could have also presented to you – happens through markets. And small-scale farms are not necessarily an obstacle to scaling to markets, if you supply them

with the technology, the services, and access to markets on the output side. That's our task.

If markets are the vehicle for scaling up, then market development is therefore essential and that again requires certain actions, and these have implications. But in the end it is really about getting specific, about tackling blockages, about de-risking the entry of, for example, seed companies or fertiliser companies into the market; it's about creating market pull, offering finance on the right terms. I have not discussed this in my presentation, but the notion of shared value is very important. Reducing information asymmetry is of critical importance because market participants cannot interact on an equitable basis if one party has a lot more information than the other.

Support data collection, research, learning, all of it with a view to crowding in private investment and private business. Because private investment and private business offer the way to scale up and to deliver the services to the farmers that they're expecting from their society, from their economy, from their governments, from their private sector.

Reference

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Dr Marco Ferroni is an expert in international agriculture and sustainability issues. He joined the Syngenta Foundation for Sustainable Agriculture as its Executive Director in 2008 after a career in multilateral institutions and government. Before joining the Foundation, Dr Ferroni worked at the Inter-American Development Bank and the World Bank in Washington DC. As Deputy Manager of the Sustainable Development Department of the IDB, he had responsibility for regional sector policy and technical support to the Bank's country departments. As the IDB's Principal Evaluation Officer he assessed the relevance, performance and results of Bank strategies and investments. As a senior advisor at the World Bank he advised on donor relations and directed work on international public goods and their role in development, foreign aid and international affairs.

Earlier in his career, he was an economist and division chief for economic affairs and international trade in the government of Switzerland. He holds a doctoral degree in agricultural economics from Cornell University.