
WORLD AGRICULTURAL FORUM
Rethinking Agriculture to Sustain a Growing Global Population
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KEY MESSAGES
Breakout Session II:
Rethinking Agriculture – The Role of South-South Partnerships
Wednesday, 30 November 2011

Moderator: William D Dar, ICRISAT Director General

In this session, we want to look at the role of smallholder agriculture in feeding a growing population and ways of reinventing what we do in the context of the emerging powerhouse economies of the world.

We will look at:

1. *The Need*
2. *The Opportunities*
3. *Some Solutions*

1. Need

Worldwide, around 1 billion people live in poverty; of this number, 300 million live in the dryland tropics of Asia and sub-Saharan Africa, the regions for which ICRISAT works. We work for smallholder agriculture because we are firmly committed to improving the livelihoods of smallholder farmers and their families and they are very important for global food production.

- Smallholder farmers provide 80% of the food to people in developing countries: to feed an estimated 9.1 billion people by 2050, global production will have to increase by 70% and by almost 100% in developing countries.
- Agriculture is characterised by very low yields; dryland agriculture in sub-Saharan Africa currently realises only 20% of potential production. With existing knowledge and technology, average yields can be increased two to three-fold in Africa.

2. Opportunity

ICRISAT's legacy of being based in India and Africa for 40 years means we have a long experience of South-South cooperation. This includes the challenges and the lessons learned.

India is an emerging power with a rapidly growing economy where agriculture still employs the majority of the population (in contrast to Europe) and many development issues such as high rural poverty persist. India shares similar poverty and infrastructure issues to Africa, so when successful solutions are found for India, they have, with some adaptation, application for Africa.

Following the food shortages of 2008 many countries, including those in Africa, have recognised that investment in agriculture represents a major step towards food security.

The global developments that are taking place represent an unique opportunity to support smallholder agriculture, especially through south-south partnerships.

So we must ask ourselves: what do we need to change, particularly in order to become more effective in helping these hundreds of millions of desperately poor people?

The key message here is to explore ways to become part of the solution, and we believe that South-South collaboration is a key. We must explore the synergy and leverage of India and Africa working and learning together, aligning more closely with the strategic and business interests of both.

During this session we will hear of examples of technologies and new ways of doing business that have benefitted smallholder farmers in Africa, through the development of markets and through technical assistance from India.

Under South-South collaboration, we see a vital role for Public-Private Partnerships (PPP). Our experience shows that these partnerships can offer solutions and opportunities for pro-poor agricultural investment and innovation that will help increase the agricultural productivity and incomes of resource-poor, smallholder farmers.

With all these research-for-development accomplishments, the big question is: How could we replicate this success in Africa? Or is the question: Can we replicate the success at all?

We believe so. There is both an imperative and an opportunity to produce more food in developing countries.

3. Some solutions

During this session we will hear of examples of technologies and new ways of doing business that have benefitted smallholder farmers in Africa, through the development of markets and through technical assistance from India.

Our research shows there are many challenges of getting these technologies to the smallholder farmer. But, it is possible with the right partnerships.

For example - The Leldet small seed packets of high yielding varieties of drought resistant seed came about through the company CEO's passion to help smallholder farmers and the support of research for development stakeholders like ICRISAT, the Kenyan Agricultural Research Institute and AGRA who financed the small pack marketing strategy .

Another example is the Hybrid Parents Research Consortium (HRPC) led by ICRISAT that brings together multi-national, national and local seed companies. The sorghum and pearl millet seed industries in India have benefited from ICRISAT's crop breeding efforts with the dissemination of hybrid seed supported by a diverse and active private sector seed industry. During recent years we have been instrumental in the release of more than 70 hybrids of sorghum and pearl millet and average crop yields have doubled.

Smallholder farmers are the key to our world's future food security. We need market-oriented public, private, producer partnerships.

Part II. Panellists

1) Arvind Kumar, DDG-R, Indian Council of Agricultural Research (ICAR)

- India has committed to agriculture since the 1960s and the increases in productivity have been spectacular. For example, India produces more than 240 million tons of food grain annually.
- The contribution of smallholder farmers to the total value of agricultural production in India exceeds 50%, although they only cultivate 44% of the land. Smallholder agriculture in India is productive.
- Success and innovation in the Indian agriculture sector may be applied to developing countries, especially in Africa. Examples include watershed management, agribusiness incubation, and food processing. Furthermore, India has very strong capability in capacity building, especially for graduate students.
- India is committed to working in, and with, Africa.

2) SN Silim, Director of ICRISAT-ESA Region

- Pigeonpea for export from ESA
 - Research on pigeonpea in Eastern and Southern Africa (ESA) has shown the huge potential that the crop has for food and for markets and it also has a role in improving soil fertility. ICRISAT has shown that the crop has specific adaptation, and that wilt disease resistance is a key trait for crop improvement efforts. India has been identified as a major market with the prime export period being May to November. ICRISAT-bred varieties meet market requirements; they fit into the local cropping systems; and, they are resistant to wilt disease.
 - The area under pigeonpea has doubled from 0.5 million ha to about 1 million ha and yield has in most cases also doubled. An innovation platform has been developed involving researchers, farmer groups, seed suppliers and traders. Babati, Karatu and Kondoa in Tanzania are now the biggest exporters of large- and white-seeded pigeonpea. Varieties developed have both African and Asian backgrounds. The benefits are tremendous; Indian consumers have a continuous supply of pigeonpea and ESA producers now have access to export markets and higher prices.
- Helping smallholder farmers to meet markets for sorghum
 - ICRISAT and partners have had a long history in sorghum research and a number of varieties have been developed for different agro-ecologies and end-user needs. Market pull has, until now, been the main constraint to improved yields and incomes for smallholder farmers. There is now a huge demand for feed and industrial uses. The poultry feed industry in Kenya alone requires 6,000 tonnes each year. Similarly, the brewing industry is turning to sorghum as a source of malt, replacing barley, and demand from Kenya and Tanzania exceeds 200,000 tonnes per year while demand in Nigeria is a staggering 600,000 tonnes a year.
 - Breeding efforts are now geared to developing varieties for specific needs and ICRISAT, working with partners in India, is developing hybrids suitable for malting.
- Groundnut (peanut) for export
 - The EU has strict phytosanitary limits on the levels of aflatoxin permitted in groundnut (4 ppb). These limits have severely restricted access to the

European market for groundnut producers in sub-Saharan Africa. To give some idea of the severity of the problem- a survey in Malawi in 2007 showed that 49% of groundnut and 73% of powdered groundnut sampled in local markets had aflatoxin levels above the EU safety limit. ICRISAT and partners set about to develop an integrated approach - improved varieties and crop management, aflatoxin testing, and traceability – to enable producers in Malawi to regain European markets.

- ICRISAT developed an ELISA test kit that allows inexpensive testing for aflatoxin. The National Smallholder Farmers Association of Malawi (NASFAM) has promoted this test kit through its farmer groups. The development of simple test kits for aflatoxin has enabled Malawi to recover lost export markets; furthermore, exports to the UK (for example) now come under the Fair Trade banner.
- Integrated watershed management
 - India has been able to achieve food security with the help of irrigation – 40% of the land is irrigated which allows two and even three crops per year. By contrast, only a small fraction of cropped land is irrigated in sub-Saharan Africa and (apart from a small belt near the equator) most farmers grow only one crop per year. Moreover, much of the region is unsuited to ‘conventional’ irrigation on the basis of water availability, topography, and soils.
 - ICRISAT and partners in India have developed the ‘watershed’ approach which has been highly successful. It emphasizes the collection, conservation and efficient use of water, with resultant benefits to soils. Pilot studies involving Indian scientists and coordinated by ASARECA are ongoing in Rwanda and Ethiopia. The lessons learned, and Indian expertise, represent a great opportunity for South-South collaboration.
- Commitment by the public and private sectors to agricultural research and development for smallholder farmers in Africa is essential.

3) Nigel Poole, Chair of the Board, ICRISAT

I wish to combine some of the points Monty wanted to make and a few of my own. The theme for this talk is taken from Richard Branson's new book "Screw Business as Usual" Branson had two key messages

- Stop saving the world, reinvent it
- Break the silos, embrace unlikely technological marriages, develop new business models

The points about SSA are:

- The size of the problem
- Importance of the smallholder farmer
- The need to rethink the linear model of farming

And to complement my colleagues on the panel I want to show how IT and social analysis when “married” to more traditional forms of plant breeding, water management etc become part of the solution. Strengthening South-South partnerships is a key part of the solution.

As Dr Dar has said more than 300 million people in the dryland tropics live on less than \$1 a day. There have been some fantastic successes particularly in India as Dr Kumar described.

But, no one can claim we have even approached a solution - the rapid increase in population is just piling on problem after problem, sometimes it feels like running up the down escalator.

The most upsetting figure I have seen recently is that in Africa 28% and in India 42% of the children in their early years do not receive the critical nutrition to fulfil their development potential. It's heart-breaking, cruel and such a waste - all that potential lost!

Finding solutions which involve the smallholder farmer is critical in Africa as in India. For example in Kenya 600,000 farmers with just 1 -3 cows each produce 80% of the country's milk. The one billion poor in Africa and Asia are fed by millions of smallholder farmers. They must be at the centre of our attention.

We need to ensure that farmers get a fair share of the improvements from research. A 20% yield gain in a crop does not usually translate into a 20% increase in profit for the farmer. We must look at the value chain and determine what improvements are actually needed by the market to ensure that benefits of increased productivity accrue to smallholder farmers.

The linear model of farming where research is passed onto the extension service and on to the farmer and on to the processor and onto the consumer etc, needs to move to a network model where researchers work with, for example food producers or brewers to identify varieties of crop for which the farmer can capture some of the added value.

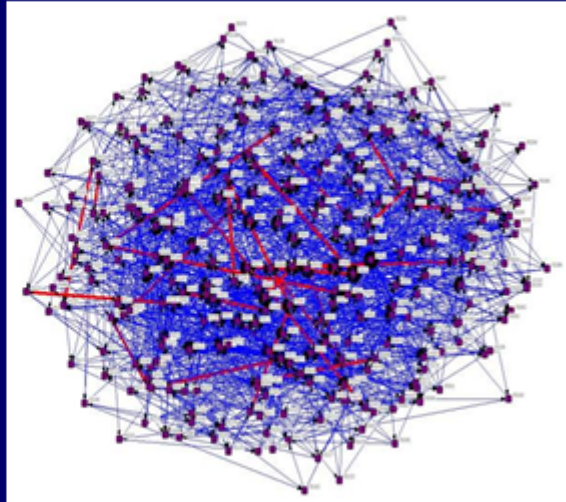
In identifying this added value modern technology is proving extremely valuable.

IT – Anyone like me who is travelling in Asia or Africa is amazed by how mobile phone technology is transforming lives. Last year we received over a million calls in the state of Andhra Pradesh on when, or rather if, the monsoon was arriving. The phone allows the farmer to find current market prices; eg, the pigeon pea farmer in Tanzania can find the price for the Mumbai market.

We are using IT extensively for education

Location, knowledge and information - key for decision making

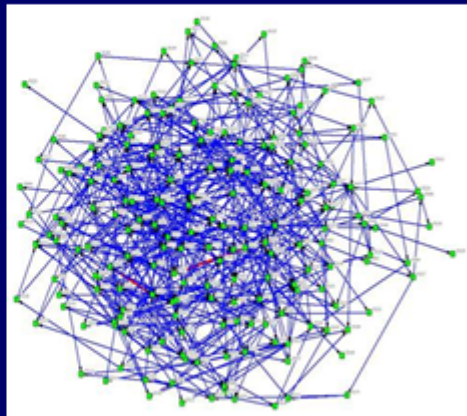
- The network architecture demonstrates the importance of knowledge and information about the new technology in adoption as well as adaptation decisions.
- The focal points in this process are the early adopters and innovators, neighbouring farmers and input dealers



Source: Author's own analysis using the VLS enhanced census surveys, 2005-09

Importance of informal networks

- Highlight the role of informal networks in improving the adoptive and adaptive capacity of the vulnerable men and women.
- technological innovations especially agricultural technology – by farmers of Kanzara - spread of a wilt resistant resistance technology through kinship networks – mostly through the women lineage
- Informal seed systems



Source: Author's own analysis using the VLS enhanced census

Linked to this is the need to **actually** listen. Dr Silim talked about the pigeonpea farmers in Babati, Tanzania. One of them said what they needed now was a credit line so they could thresh their crop and stop it being discoloured by the soil – another example of added value. One of our board members, Philip Ikeazor, who is a Director of one of the largest banks in Nigeria, pointed out that African governments give money to banks to lend to farmers **but** the bankers don't know the questions to

ask a farmer to evaluate the risk. The bankers need a “teach in” from people they respect.



Its early days yet but it seems that this meeting is already having a positive effect.

Earlier Dr Dar talked about how advanced countries have very generously been funding scientific and technological developments to alleviate the plight of the poor and the research breakthroughs in these countries have been critical. There have been some incredible successes **but** we still have one billion who live in chronic hunger. The support of well-off countries must continue but, we also need new business models.

At ICRISAT we have been taking a very hard look at what we do. One of the key components of our new business strategy is strengthening the South-South component. We spend about 50 % of our income in Africa and 50% in India/Asia and you have heard examples of the synergy **that already exists** between our work in India and Africa. We are now working with our partners in the Government of India and with African governments, NARs, NGOs and increasingly private companies to up our game. I look forward to hearing your ideas on how we can do better.

Part III. Discussion and Wrap-up (Moderator)

Mutually beneficial economic relationships among countries need further nurturing, perhaps more so now than at any other time in history. Science alone could not feed the world's projected population of more than 9 billion in 2050, which will require a 70% increase in food production to maintain the same dietary standard we have today.

The South-South collaboration will build upon the already strong and successful India-Africa partnerships to scale up their respective roles as driver of prosperity and economic opportunities in the dryland tropics.

Again, PPP is a key component of the South-South collaboration. PPP is vital in enhancing agricultural production, reducing rural poverty, and fostering sectoral and economy-wide growth and development. PPPs are a progressive way of widening access to technology, enhancing product development and linking farmers to markets particularly between India and Africa.

Lastly, let me go back to the assumption that I made at the beginning of the session – that if we are not part of the solution, then we must be a part of the problem. We must, therefore rethink our strategy.

We need to take a systems perspective, to understand better how development actually happens in drylands, how it can be triggered. How can it be sustained, so that the poor in Asia and sub-Saharan Africa need not always depend on emergency relief aid? How can the poorest be involved? And given the diversity of dryland settings, how can diverse solutions be scaled-up for wide impact?

To be a part of the solution, our strategy is South-South collaboration, particularly public-private partnerships. We will build on the strength linking partners in India and Africa to significantly improve the livelihoods of the poorest of the poor in the dryland tropics.

In closing, I would like to highlight an exciting new development at ICRISAT that has been recently reported in Nature Biotech, one of **the** most prestigious scientific journals. Dr Rajeev Varshney and colleagues have sequenced the pigeonpea genome. This will enable us to accelerate gains in pigeonpea breeding and improve yields and resistance to key constraints. It also represents a compelling example of how advanced countries, along with India and ICRISAT have worked together, with the support of public funding, to make a major scientific breakthrough that will, in all likelihood, result in benefits delivered to smallholder farmers by the private sector.

Some questions that we may need to answer are as follows:

- Quoting that smallholder farmers have to be at the centre of agricultural investments. In recent years, important investments in Africa have come from China, India... What are the best practices in terms of inclusive development/social responsibility and how to make it happen?
- We talk about partnerships, but who partners with whom? How to get the smallholder farmers in the picture when common practice is to go top down, directly to central government. It is not the easiest (farmers not organised, no infrastructure) nor the cheapest to include the smallholder farmer.
- Talking about research partnerships for capacity-building of African researchers. What needs to be in place so that research capacity in Africa increases? And that there is no brain drain? Idea behind this: more funds from both sides to send researchers abroad (and multilateral donors), and then get back to build capacity within country, avoiding the brain drain in developing countries. For this, there is a need for strong government incentives and willingness so that these people when they come back will have a high sense of social responsibility.