

Farmer First: Shifting Paradigms in Agricultural Technology Development

Technology – seeds, breeds, fertility inputs, disease control, water management – is key to getting agriculture moving. Major investments have been made to support technology development and transfer, but impacts have been patchy. Lessons from across Africa show that the effectiveness of agricultural technology generation and dissemination institutions depends crucially on their relevance and responsiveness to farmer needs.

CAADP is calling for a paradigm shift away from a ‘technological package’ approach to a ‘truly integrated agricultural research’ approach – with national and international researchers working together with smallholders, pastoralists, extension agencies, the private sector and NGOs to achieve impact on the ground¹.

New approaches – along with new technology options and new players, particularly in the private sector – create new challenges for the governance of technology in the agriculture sector. The old research and extension arrangements are no longer appropriate, but what is?

This brief examines three areas of the agricultural innovation process drawing on recent research by Future Agricultures Consortium. It asks:

- How can farmers be empowered to be active players in improving agricultural productivity – not just in terms of increasing their yields, but also in decision making on how programmes and policies are shaped?
- Can decentralisation improve local governance and promote pluralistic extension systems responsive to the needs of users, including the poor?
- What public and private sector (national and international) actors and interests are defining seed policies and how is this impacting on technologies for the poor?

Farmer first: innovation approaches for ‘truly integrated’ research with farmers

Challenges, questions

Making agricultural technology generation and dissemination relevant to the needs of farmers – particularly the poorest and those in complex, risk-prone environments – is a huge challenge.

Over the past two decades shifts have begun away from technology transfer approaches towards more people-centred research and development (Table 1). Participatory plant breeding involves farmers in the process of choosing and testing new crop varieties. Extension systems are being transformed, moving from top-down instruction towards farmer-to-farmer exchange and joint learning. The use of new information technologies is expanding, allowing information sharing between farmers. As a result, farmers are increasingly being seen as partners in the innovation process, rather than merely recipients of national and international research and extension. But progress has been slow and fragmented.

Genuine empowerment of farmers is needed to ensure their meaningful participation in setting priorities and work programmes

for research, extension and training to ensure their relevance². But how can this be done?

Empowering farmers: A Farmer First Approach²

Beyond the farm – taking an innovation systems perspective. Empowering farmers to become active players in an increasingly globalised system means moving beyond the traditional focus on farmers and technologies to farmer relations with other actors through markets. Participatory approaches are being used to: diagnose market chain challenges and opportunities, and facilitate change in market systems. New platforms for interaction between farmers, farmer groups and businesses are being created. But there are winners and losers: the challenge is sharing potential benefits more widely among marginalised farmers. This means going beyond participatory diagnosis to addressing political, institutional and organisational change – changing the rules of the game.

Organising research and development. Standard technology transfer models have been challenged in fundamental ways. The separation of basic centralised research from adaptive decentralised research is seen as inappropriate; whilst farmers – as users of technology and research – need to be involved throughout the research system as collaborators. Notable successes include: i) Participatory Plant Breeding – where farmers are involved in the early stages of research when objectives are set, and decentralised breeding programmes enable varietal selection with farmers in diverse local environments ii) Farmer Field Schools – innovative programmes in Integrated Pest Management and root crop agriculture have improved understanding of innovation systems and factors influencing scaling up from the point of view of farmers, field practitioners and institutions. But often farmer participation is an add-on to old-style approaches, with the real research decision-makers unaccountable to users. This requires serious attention to the ‘politics of demand’ – where farmer organisations can play a key role.

Working with farmer organisations. Farmers are seldom involved in governance of research organisations, particularly in budget allocation and setting priorities for R&D – apart from often token consultations. Farmer organisations have a critical role to play in voicing demand for technology research and development. Yet political clout of farmers’ organisations is hugely variable, as is public sector responsiveness to farmers’ demands. Many farmer organisations lack lobbying and advocacy capacity: here networks and alliances are increasingly active. Important questions need to be asked about accountability, representativeness and governance of farmer organisations: who is included and excluded and how are their interests being represented? Ways forward include:

- innovative funding mechanisms for Farmer First approaches (e.g. PROLINNOVA, DURAS in West Africa);
- guaranteeing a stake for farmers in national and international research and extension organisations;

iii. platforms for on-going dialogue between the many stakeholders (public and private) in research and extension.

Promoting organisational and personal change. There are major hurdles in shifting core business from technology delivery to a Farmer First approach. R&D organisations' vision increasingly involves moving upstream, engaging with the private sector and working on new advanced (bio)technologies - without a strategy on how such efforts would be used, and by whom. Revitalising research institutions as genuine learning and partnership organisations requires change in both organisations and individuals. Action is needed on several fronts:

- i. Creating learning spaces within institutions to promote sharing of ideas and reflection on working with farmers – and making this a core part of people's activity.
- ii. Initiating joint working opportunities through research programmes, field visits, workshops.
- iii. Shifting mindsets – through new forms of agricultural education (embracing diverse sources of knowledge and knowledge systems) and professional reward (incentives, awards, promotion).
- iv. Championing change – enlisting advocates, establishing strong networks of practitioners, encouraging mentoring, and pushing partnership approaches into mainstream research.

Demand-driven extension: agricultural services and decentralisation

Agricultural extension services across Africa are undergoing radical change. Drivers for change include: concerns to make services more accountable to users, the emergence of multiple extension providers, and economic considerations. At the same time there are moves towards more decentralised government in a number of states.

Decentralisation should enable more agricultural services to be more demand-driven, with decision-making moving closer to people using the services. It also opens up the possibility for increased

involvement by a much wider range of local stakeholders – moving away from the top-down systems of decision-making that have operated for the last 60 years. But experiences from two countries show that these processes are far from complete.

Decentralisation and demand-driven services: the Malawi experience⁴

Malawi's new extension policy (developed in line with the decentralisation process) proposes a bottom-up and participatory strategy for planning interventions, and calls for demand-driven services from different providers to meet wide ranging extension needs. The policy is a middle-of-the-road alternative between paying for extension (privatisation) and the voucher system (public provision). Individual farmers request services from extension workers (the poor and marginalised are at a disadvantage), and new Village, Area and District Stakeholder Panels – including farmer associations, smallholder farmers, traditional leaders, agribusiness and NGOs - identify extension priorities, which are then fed upwards to inform planning processes. Panels are supposed to: coordinate the planning and delivery of service provision so there is equitable distribution of services across the districts; promote sharing of best practices, particularly on modalities of service delivery; and provide inputs on development proposals coordinated at District level or in the centre.

So far the potential of decentralisation to improve local governance and promote demand-driven pluralistic extension has not been realised. This is due to:

- **Public sector capacity constraints** – staff shortages, lack of incentives, and insufficient and unpredictable budgets lead to uneven access to extension services. Farmers who belong to cooperatives and associations are better able to access services as these can afford handouts to extension workers. Access is further biased towards areas where NGOs and government development projects

Table 1: Changing approaches in agricultural research and development

	Transfer of Technology	Farming Systems Research	Farmer Participatory Research	People-centred Innovation and Learning
Era	since 1960s-	1970s-80s	From 1990s-	2000s-
Model of activities	Supply through R&E pipeline	Learn through survey	Collaborate in research	Innovation network with co-development
Farmers seen by scientists as	Progressive adopters, laggards	Objects of study and sources of information	Colleagues	Partners, entrepreneurs, innovators, setting the agenda.
Scientists as seen by farmers	Not seen – only saw extension workers	Used our land; asked us questions	Friendly consumers of our time	One of many sources of ideas and information
Knowledge and disciplines	Single discipline driven (breeding)	Inter-disciplinary (plus economics)	Inter-disciplinary (plus farmer experts)	Extra/trans-disciplinary – holistic, culturally-rooted knowledge
Farmers' roles	Learn, adopt, conform	Provide information for scientists	Diagnose, experiment, test adapt	Empowered co-innovators, negotiators
Scope	Productivity	Input output relationships	Farm based	Livelihood/food systems, value chains; multiple scales, timeframes
Core elements	Technology packages	Modified packages to overcome constraints	Joint production of knowledge	Social networks of innovators; shared learning and change; politics of innovation
Drivers	Supply push from research	Scientists' need to learn about farmers' needs and conditions	Demand pull from farmers	Changing contexts: markets, globalisation, climate. Organised farmers, power, politics.
Key changes Sought	Farmer behaviour	Scientists knowledge	Scientist-farmer relationships	Institutional, professional, personal change: making space for innovation
Intended outcome	Technology transfer and uptake	Technology produced with better fit to farming systems	Co-evolved technology for livelihood systems	Capacities to innovate, learn and change
Institutions and Politics	Assumed away	Ignored, black boxed	Acknowledged (naive)	Central to change
Innovators	Scientists	Scientists adapt packages	Farmers and scientists jointly	Multiple actors – learning alliances

are working as they are able to facilitate demand for extension workers for their communities.

- **Coherence between local and national policy** – priorities identified at local level are frequently sidelined to give way to national level priorities, providing political benefit at the centre.
- **Lack of a significant alternative** – the public sector is still the dominant service provider. NGOs frequently rely on Ministry of Agriculture staff for extension activities. Legitimacy and accountability to farmers is also an issue, as NGOs are essentially accountable to donors.
- **Weaknesses in decentralisation** – lack of funding for the operation of stakeholder panels and other structures, lack of capacity to mobilise senior stakeholder representatives and conflicting interests and competition between players. Repeated postponements of local government elections (for local councillors) have effectively stalled the rollout of stakeholder panels as mechanisms for demand-driven services.

Agricultural services and decentralisation under the new Kenyan constitution⁵

The new Kenyan constitution proposes greater decentralisation of government. This opens up opportunities for greater local control over planning and budgeting to match local provision more closely to local needs. But what are the opportunities and constraints for improving planning and accountability of service providers?

- **Increased spending on agriculture.** Between 2003-2009 the budget of the Ministry of Agriculture has been rising - driven by the new government's desire to demonstrate improved service delivery to the electorate, and effective lobbying by well-connected officials - citing commitment under the Maputo Declaration to spend 10 percent of the budget on agriculture (though the target has not yet been reached). Unfortunately, some of the gains have immediately been offset by inefficiency losses due to the proliferation of ministries within the agriculture sector (increased from 3 to 10). Farmer representatives, private stockists and government staff are keen for all agriculture-related budgets to be put into one 'pot' at district level, with local stakeholders deciding on spending and staffing priorities across agriculture, livestock, fisheries, irrigation and forestry.
- **Resource allocation at district level.** The Ministry of Agriculture is the best resourced and funded of the rural development ministries, but its performance is hindered by: insufficient operational budget, an imbalance between office- and field-based staff and low morale amongst extension workers. Central control means that local managers have little influence over staff deployment, motivation and promotions. Local control would almost certainly mean greater emphasis on front-line service provision, and increased allocations for transport, cell phone airtime and demonstrations. Stakeholders are keen for some of the budget to be allocated through flexible processes to other locally identified needs (as the Constituency Development Fund (CDF) is supposed to be used).
- **User control and accountability.** District-based stakeholder fora have been engaged in consultation and collaboration over a number of years, but have no power to influence budgets or hold service holders to account for their performance. Often they do not even know what the budget is. Local decision-making structures can, of course, be captured by local elites and funds misappropriated – as the operations of the CDF show. Services will only become more responsive where citizens are organised, eloquent, vigilant or well-connected – and this can count against the poor. Decentralised delivery of agricultural services would undoubtedly give efficiency gains in an agro-ecologically, infrastructurally and culturally diverse country such as Kenya. Existing stakeholder fora

– with appropriate new powers – could play a valuable role in planning and holding service providers to account. The details of how agricultural services would be delivered need to be addressed as part of the roll out of the new constitution.

Political economy of seed systems

As calls for a 'uniquely African Green Revolution' gain momentum, seeds and seed systems have become a priority on the agricultural policy agenda. The focus has been on technology and market 'fixes' - with substantial investments being made in seed improvement and the development of public and private sector delivery systems. There has been much less debate on the wider policy dimensions - but experience shows political economy factors often make or break even the best designed and well intentioned interventions.

Since investment in seed improvement was last prioritised in the 1970s-80s, national seed breeding systems have collapsed and have been only partially and selectively compensated by the private sector. Multinational seed and agricultural supply companies are increasingly dominant, with promises of new technologies transforming the seed sector. While informal farmer breeding and seed supply systems remain important for poor farmers across the continent – supported by NGOs - they are under pressure from drought, conflict and economic transformation, and frequently excluded in policy circles.

Different public and private sector (national and international) actors and interests are involved in seed policy - playing out differently within different country contexts (two discussed here). A common New Green Revolution narrative emerges of farmers engaging actively in markets and, with the right provision (e.g. subsidies), adopting new varieties and increasing productivity. Important questions are: whose voices are being heard? How might new seed systems affect the availability of technologies for poor farmers in marginal areas?

Political economy of seed systems in Ethiopia⁶

Ethiopia's agricultural policy framework has been dominated by a top-down, centrally-designed approach. The cereal seed system has followed a similar approach, with the public sector dominating a formal seed system designed to serve the needs of large-scale farms and farmers' cooperatives, with a limited role for a highly regulated private sector.

Over the last two decades, strong political leadership - committed to growth through agriculture - has pushed a state-initiated 'green revolution' strategy, supported by a partially liberalised private sector. Numerous centrally-directed R&D programmes have attempted to improve, multiply and distribute new cereal varieties – sometimes conflicting with decentralised efforts. But capacity of the state and quasi-private suppliers is inadequate - and there is growing recognition of the limitations of the 'Ethiopian Green Revolution' vision. Serious seed shortages have triggered important change in: licensing basic seed multiplication – to both public and private seed companies; increasing contracting-out and promotion of farmer-based seed production and marketing – linked to and supported by quasi-private companies. State capacity has been boosted (along with farmer-led initiatives e.g. multiplication programmes) - by new investment from influential global philanthropic institutions and multi-lateral donors. Whilst there will undoubtedly be benefits, the dominance of certain actors means research priorities could be narrowed to a limited set of technological solutions serving particular groups - better off farmers who can afford hybrid seed - to the exclusion of others – the millions of smallholders with diverse livelihoods pathways and technological needs.

Political economy of seed systems in Ghana⁷

The framework of cereal seed policy in Ghana has undergone major change: from a state-led service in the 1960s-70s, through attempts to privatise seeds under structural adjustment in the 1980s-90s (private investors were unwilling to invest in a poorly developed sector), to a commercial sector of public-private partnerships in the 2000s. Recent interventions have built networks of civil society organisations working with private and public partnerships to create the social, economic and knowledge infrastructure needed for private seed markets to emerge.

Seed policies have been driven by commercialisation and privatisation issues – which have dominated – and equity, participation, farmers' rights and environmental concerns – with inherent tensions between the two. Participatory breeding is based on farmers' evaluation of new varieties, incorporation of farmers' varieties and knowledge into breeding, and open access relations between breeders and farmers. Commercial networks are concerned with 'manufacturing' markets for seeds where there is low demand and farmers multiply their own seeds. Seeds are represented as objects that can be appropriated (rather than the products of largely public processes) and the panacea for farmers' problems – the solution to hunger in Africa. Donors and new private foundations are supporting commercial markets and subsidising commercial seeds: but these can lock farmers into agribusiness interests and contracts. Assumptions about markets and improved seed are undermining the participatory basis of breeding, particularly for diverse, risky and uncertain environments characterising much of Africa – for which agricultural modernisation has no solution.

Key Policy Findings

- Empowering farmers to be active players in agricultural research programmes involves: supporting farmers and their organisations through innovative funding, guaranteed stakes in R&D organisations and platforms for dialogue. At the same time, research organisations need to create opportunities for interaction with farmers, new forms of learning and rewards and champions of change.
- Decentralisation offers the potential for more demand-driven and pluralistic service delivery, but local stakeholder forums need strengthening if they are to participate effectively in planning and hold local providers to account.
- Seed policies – whether led by public or new private sector interests – are now prioritising market-based systems and high yielding (mainly maize) varieties. Commercial approaches while important cannot fix all the problems – and may limit the options – of millions of poor farmers in difficult environments.

Endnotes

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