Future Agricultures

Policy Brief

The Political Economy of Cereal Seed Systems in Africa's Green Revolution

Introduction

Drawing on lessons from case studies from Ethiopia, Ghana, Kenya, Malawi and Zimbabwe conducted by the Future Agricultures Consortium during 2009-11, this Policy Brief assesses the political economy of cereal seed system research and development programmes and processes across Sub-Saharan Africa. By examining the contrasting politics and different configurations of interests affecting the way cereal seeds are produced and delivered in these countries, it identifies opportunities for reshaping the terms of the debate and opening up alternative pathways towards more sustainable and socially just seed systems.

Framing the challenge

Producing more food for a growing population in the coming decades, while at the same time combating poverty and hunger, is a major priority for African agriculture.[i] Broadly speaking, however, many major initiatives in Africa attempting to address these issues share a 'market-led technology adoption' theory of change. [ii] In recent years, significant amounts of international research and development (R&D) assistance have been channelled into technical, financial and institutional support for crop breeding, market development and input subsidies in an attempt to kick-start agricultural growth based on smallholder production across Sub-Saharan Africa.

This approach combines a primary emphasis on the promotion of new seeds and fertilisers (based on the success of the Asian Green Revolution of the 1960s and 1970s) with the aim of delivering the Green Revolution through networks of local entrepreneurs, typified by the small-scale stockist or agro-dealer.

A range of major initiatives, including the Alliance for a Green Revolution in Africa (AGRA), the Millennium Villages Programme (MVP) and the U.S. Government's new Feed the Future programme, are all focusing on different elements of this agenda. Also under the umbrella of the Comprehensive Africa Agriculture Development Programme (CAADP), a programme of the Africa Union's New Partnership for Africa's Development (NEPAD), national governments are signing up to

'compacts' with the aim of channelling further funds in the support of the agricultural sector. All these initiatives can be seen to share a theory of change that may broadly be described as 'market-led technology adoption' which has three essential components:

1. To help farmers realise a higher proportion of their potential yield by planting new varieties of Africa's staple food crops that significantly reduce losses and increase the stability of yields while meeting human nutritional needs and consumer preferences

2. To help farmers increase the yield potential of their fields by enhancing agricultural productivity through increasing use of synthetic fertilisers and soil management practices to supply adequate plant nutrients

3. To build and make more equitable both the input markets that can deliver better seeds, small fertiliser packets, and other inputs to farmers, and the output markets that enable farmers to convert surplus production into profits and to generate greater income.

The politics of innovation in African agricultural systems

Given this orientation, it is not surprising that much of the focus of the current debate and the framing of many of these initiatives is on overcoming narrowly defined technical and market challenges. These are of course very real and should not be underestimated. But much less discussed, and sometimes almost completely forgotten, are the political, institutional and social dimensions of designing and implementing a new Green Revolution for Africa. As Djurfeldt, et al.(2006) observe:

[T]he problem with African food production is neither technology (i.e. wrong crops) nor nature (i.e. poor soils and erratic rainfall). Nor [is it] that African governments have been reluctant to engage with the agricultural sector. On the contrary, there have been repeated attempts at …[agricultural] intensification. Nevertheless, during the last decades attempts to implement Green Revolutions in Sub-Saharan Africa have seen short-lived spurts of production rather than lasting improvements in productivity. Instead of asking, 'Why have Green Revolutions been absent in Africa?', we need to ask 'Why have Green Revolutions not been sustained in Africa?

Debates about agricultural innovation in Africa are open to a variety of competing narratives about key science and technology problems and their potential solutions, each suggesting different pathways to reach more sustainable and productive agricultural futures. [iii] These narratives – or storylines – are promoted by particular actors in specific contexts (some with more power and influence and some with significantly less) and embody different framings, values and goals. But questions remain as to why certain narratives and pathways come to dominate debates in African agricultural policy circles while others remain marginal or even hidden from view. In addition, which innovation pathways are pursued and which are not is in large part a question of the governance of technology: a politics of narratives and pathways shaped by power relations and institutional interests. [iv]

Seed system politics

A 'seed system' is the sum of physical, organisational and institutional components, their actions and interactions that determine seed supply and use, in quantitative and qualitative terms. They include formal, informal and seed aid subsystems, with many flows between these. For example, new 'modern' varieties of seed, though launched by the formal

system, may move into informal channels quickly and may be recycled by farmers, disseminated through farmer-to-farmer networks or even sold in local markets. At the same time, local varieties, or landraces, may be brought into the formal system for testing, certification and multiplication and then released officially through conventional channels. Local seed markets (also known as 'grain markets') are vital for farmers to meet their seed needs, especially for poor farmers and in difficult times. For many farmers, local markets are a good source, after home stocks, as they may sell the same varieties as farmers routinely sow and at reasonable prices. Relief seed, especially in Africa, has increased significantly since the 1990s and may be the major component of seed supply in some countries. This varies by crop, of course, with the cereals and particularly maize, where hybrids now represent an estimated 44 percent of maize area in Eastern and Southern Africa (outside South Africa) and 60 percent of maize area in West and Central Africa. This is being supplied more through formal systems, although often only sporadically and inconsistently, depending on seed supply capacities, private sector development and market linkages.[v]

Overall 'seed security' arises from the combination of seed availability, access and quality [vi] which is dependent on the functioning of the seed system. Green Revolution efforts focus primarily on the formal system, in particular, on seed quality (increasing yield levels through breeding, and in some cases genetic engineering). These efforts also aim to address issues of seed availability and access, through a focus on private sector development, the facilitation of market channels and the support of agro-dealers. Through an improvement of the formal system (with spin-off benefits through the provision of new genetic material to the relief and informal systems) the technological innovations of the Green Revolution are to be delivered.

This approach presupposes a particular structure and function of the existing seed system, whereby strengthening of the formal system is all that is required. However, in Africa, seed supply is dominated by informal systems – in some estimates around 80-90 percent[vii] – which have been shown to be remarkably resilient[viii] offering high levels of genetic diversity and the ability to adapt to changing circumstances through local innovation systems. [ix] But it is often thought that informal systems are inefficient and supply only low quality seed in variable quantities, which has often been the premise of relief and recovery programmes, for example. It is also assumed that poor harvests mean lack of seed availability, but this is often not the case and seed supply persists even following sustained periods of drought or conflict which disrupt food production.[x] Recognising the importance and potentials of informal systems is essential to Africa's agricultural future and a narrow focus on the formal system to drive a new Green Revolution in the region may mean missing out on the largest, most vibrant area of technological development and potential transformation. For informal systems, while resilient and productive in many respects, are not perfect and there are major opportunities for improvement through innovation which links local systems with cutting-edge science and technology in new ways.[xi]

Whether concentrating on the formal seed system or more rarely on the informal system most discussions of an African Green Revolution focus on the elements such as: breeding, regulation and marketing. While all of these are of course important factors in shaping the overall performance of the total seed system,

what is often missing is an analysis of the politics that influences both the understanding and the functioning of the seed system.

Politics affects the framing of the 'system', influencing what elements are given priority over others, where investments are channelled, what institutional arrangements have the power to govern seed policy and practice, and how the overall narrative of system objectives is constructed. Politics also affects the interactions between these elements. These dimensions are, however, often not highlighted in the literature and are frequently discussed only in superficial ways in relation to seed policy.

Lessons from the country studies

To better understand seed system politics, FAC undertook a broad mapping of the national seed systems in five countries – Ethiopia, Ghana, Kenya, Malawi and Zimbabwe – examining the historical origins, key narratives (defining key seed policy problems and solutions), actors and networks (the individuals and organisations involved and their connections) and political interests (the power relations and interests that push forward particular perspectives and policies that shape particular socio-technical trajectories of innovation). The five country cases provide insights from a diverse range of political economic and agroecological contexts. The lessons emerging from these analyses comprise the core of this Policy Brief.

The focus on cereal seed systems allowed the FAC team to concentrate on a similar set of crops with a key influence on food security at household and national levels across five countries. Whether grown for local subsistence or traded commercially, the significance of cereal crops to national politics (and therefore arguments about food security and sovereignty), commercial interests and local livelihoods is profound.

In the study on Ghana, Kojo Amanor (2012) argues how a strong commitment to agribusiness development dominates policy and is reinforced by US-funded NGOs and private capital, resulting in a particular configuration of actors driving a narrowly defined Green Revolution agenda. With the policy focus now dominated by a commercial, agribusiness model, there have been knock-on effects in the traditional areas of public research and extension, changing priorities and practice at regional and national levels, and reducing opportunities to promote a more participatory, farmer-led approach. This serves a particular set of political-economic interests, whereby a close alliance between the state, local/foreign capital and business interests and donors and NGOs construct a particular vision of the future of agriculture. As a result there is no separation of policy prioritisation, investment, oversight/regulation and production. As Amanor argues, this apparently 'universalising consensus' acts to exclude alternative perspectives and practices in agriculture, suggesting that there is only one pathway to a new Green Revolution in Ghana, when of course there are – or could be – many.

In Ethiopia, by contrast, Dawit Alemu (2012) shows how the state is much more present, even in so-called private sector activity. While there are contrasting interests in federal and decentralised state level activities, it is state-driven imperatives that define what private sector activity is able to happen and where. With the suppression of non-sanctioned entrepreneurial activity, much is driven underground, operating outside the formal economy. This is important, but it is difficult to trace its overall impact. However, centrally-directed, state supported efforts – including

numerous campaigns, special projects and programmes - confront numerous blockages undermining efforts to extend the Green Revolution, for example, in the supply and distribution of seed. Farmer-based seed multiplication efforts are seen as an important route to resolving this. These involve local production and local marketing, aimed at boosting production in a locality, linked to and supported by quasi-private, yet state controlled, seed enterprises. Inevitably these efforts too are bound up in a political economy which depends on the relative influence of centralised directives and regional autonomy, as well as the balance between state-directed control and private entrepreneurship.

Hannington Odame and Elijah Muande (2012) argue in their study of Kenya is in many ways the 'poster child' for Africa's new Green Revolution. It supports several major public-private partnerships seeking to build on a strong private seed sector and a well developed and extensive network of small-scale agro-dealers to promote the spread of new agricultural technologies. They report, however, that agro-dealers are spread unevenly throughout the country and are inevitably concentrated in the higher potential agricultural areas. With funding from both philanthropic foundations and government, these small-scale rural entrepreneurs are now being provided with a range of technical support from international NGOs, including training in business management. Nevertheless, making a business out of selling seeds and fertilisers to poor farmers is risky, especially in the dryland areas where demand is low and often variable. As Odame and Muange report, links with particular seed companies is essential for the survival of these enterprises, but the changing structure of the Kenyan seed industry and the entry of large multinational players are changing this dynamic. This is acting to narrow the choice of seeds and crop types for farmers in all areas. Moreover, these alliances have thus far largely ignored informal seed systems, which often serve the majority of poor farmers in more marginal areas, and therefore remain beyond the reach of new initiatives and investments.

In his study of Malawi, Blessings Chinsinga (2012) highlights how maize politics has come to dominate that country's particular brand of electoral politics and created a seed industry controlled by multinational companies, who offer farmers a narrow range of products. The alliance between the state, the donors and the private sector (both global multinational and local) is strong, often excluding alternative perspectives. Their interests coincided around a set of input support programmes over the past decade, especially the Agricultural Input Subsidy Programme (AISP), which since 2005 has provided farmers with vouchers to purchase hybrid seed and fertiliser. The AISP has contributed to Malawi's success at improving its food security situation, but it has been an expensive, intensely political and highly contentious initiative. This is largely because the political fortunes of the government are intimately tied up with the continued support for subsidy programmes, with the previous two elections having been fought on this basis. Over time, and pushed by the donors in particular, there has been a greater incorporation of the private sector in the delivery of the programme. Global seed companies – notably Monsanto – provide seed in bulk and a network of agro-dealers deliver this through a voucher programme. This has proved a great benefit for both major seed companies, as well as small-scale entrepreneurs, but it has had a diversity of indirect effects, including favouring certain enterprises over others (those with capital and able to link up with the large seed houses),

certain seed products (hybrid/OPV maize over other seed options) and research priorities (undermining national breeding capacities).

A similar dynamic exists in Zimbabwe as it does in Malawi, with both government and donors/NGOs focusing their efforts on the national relief and rehabilitation programme. Charity Mutonhodza-Davies and Douglas Magunda (2012) describe how major input subsidy programmes have been rolled out since 2009 focused on getting improved seed to poor farmers in both communal areas and new resettlement areas. The donors provided funds through NGOs who focused on communal areas, while the government channelled funds through state agents and focused on the new resettlements. Despite differences in implementation strategy, the overall narrative justifying the interventions was the same: there was a major gap in supply of seed and in order for food security to be assured, subsidised (indeed free in most instances) improved seeds should be supplied. These efforts were deemed 'emergency' measures, and so implemented in a hurry. In most instances they by-passed existing channels for the delivery of seed and relied on those commercial suppliers who could deliver in bulk and fast. For many, the programme has acted to undermine the longer-term recovery of the seed sector, while providing support to a narrow group of commercial interests, and offering a form of patronage to state and NGO actors implementing programmes at the local level.

Diverse pathways to diverse Green Revolutions

As these five case studies show, there are many political-economic factors shaping Africa's seed systems and therefore potentially many pathways to a new Green Revolution for the region. These include:

- Technological breeding efforts of certain key crops and varieties through particular breeding or genetic engineering techniques. However this results in 'orphan' crops or alternative breeding strategies getting short shrift, with limited funds, low prestige and inadequate R&D.

- Market solutions through alliances with the private sector and the promotion of agro-dealers geared towards certain 'breadbasket' areas with well-connected market linkages, a substantial network of small-scale commercial enterprises and high market demand for certain types of seed. This approach is central to the marketing operations of established seed houses in the formal systems, and moves away from support for informal seed systems in more remote areas with limited market access. Direct seed distribution as part of seed aid and relief programmes, which link 'social protection' and humanitarian assistance with development in ways that may act to undermine local markets and seed production and sharing.

In other words, less by explicit design but more by cumulative default, political-economic interests create certain pathways for the new Green Revolution, constructing seed systems in their wake in particular ways, while obscuring or even disrupting alternatives. What then are the alternative pathways to a new Green Revolution that do not subscribe to the narrow framings and particular constructions of the mainstream versions described above? Can they perhaps deliver the same benefits, or indeed more to a wider group of people, through different means? And what are the political-

economic obstacles to achieving these alternative pathways?

Releasing the idea of a Green Revolution for Africa from the narrowly-defined 'market-led technology adoption' framing offers the opportunity for diverse framings of seed system problems and solutions. But how can such varied framings, with such important implications for alternative pathways, be debated in ways that allow a plurality of visions to flourish? This requires a more mature political debate about the future of agriculture – and within it seeds – in Africa, one that sees a Green Revolution as essentially a socio-technical transformation, where technological elements are combined with social, cultural and ecological dimensions in complex ways resulting in multiple configurations, suited to different settings.

However, we do not want to set up an artificial dichotomy – 'good' vs. 'bad' or 'mainstream' vs. 'alternative'. What is needed is a more plural vision for Africa's new Green Revolution. In some settings, such as the well-endowed, high-potential, 'breadbasket' areas, the mainstream, rather narrow vision of market-led technology adoption may be highly appropriate, as it was in Asia's Green Revolution. In others, particularly the complex, diverse, risk-prone lands that comprise much of Africa's agricultural contexts, we will need alternative perspectives and pathways, or some combination.

Of course, arguing for plural innovation pathways and a diversity of responses to Africa's food security challenge has long been done. Indeed, arguing that a 'one-size-fits-all' approach must be avoided is part of the wider rhetoric, with some calling for Green Revolutions (in the plural) or even a 'Rainbow' Revolution'.[xii] But this does not mean that in practice a plurality of options are endorsed and pursued as politics and interests shape how pathways are constructed, and what gets funded, ignored or undermined.

Conclusions

One of the central lessons from the Asian Green Revolution is the need to respond actively to diverse geographical and social settings. For Africa, everything cannot be delivered as part of the 'maize model' – where germplasm responds to breeding efforts, hybrid varieties offer significant returns, the private sector is geared up and interested in breeding and multiplication, where agro-dealers are present and well trained, and where farm-level demand is widespread. Although this approach has certainly had its successes, and is central to the ambitions of major programmes such as AGRA, the Millennium Villages and CGIAR centres such as CIMMYT,[xiii] and is crucial to the business models of the likes of Monsanto, Pioneer and other multinational purveyors of new seeds and agrochemicals, it also has clear limits. As we have seen, for many crops, even other cereal crops (including teff, millet, to some extent sorghum), the model doesn't work. And for many women, poorer people and those living away from markets they miss out.

To foster a multiplicity of innovation pathways for the new Green Revolution in Africa, therefore, we need to encourage a more robust and inclusive debate about viable alternatives, with different visions implying different pathways which may be pursued in parallel or in combination. We also need to diversify our narratives about the future, being more encompassing of different objectives and avoiding the danger of closing down and locking into a narrow 'market-led technology adoption' trajectory.

In order to do this we need a more open political debate about the future which challenges the vested interests that create singular, narrow visions. And through a more diverse vision of Africa's Green Revolution, and the role of formal and informal seed systems within it, we need to open up the innovation process, making use of new information technologies and networking opportunities to link high-end genomics with local adaptive research with farmers. These must go beyond highly individualised and privatised solutions to other group-based efforts, rooted in particular farming communities and socio-technical contexts, and connected to public research and extension. One size must not fit all, especially in settings as diverse as those found across Africa.

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End Notes

i Wiggins 2009, Jayne et al. (2010)
ii Toenniessen et al. (2008), see also AGRA (2011), Denning et al. (2009), Sanchez et al. (2009)
iii Thompson and Scoones (2009)
iv Scoones (2005), Leach et al (2010), STEPS (2010)
v Langyintuo et al. (2008), (2010), Smale et al. (2011), Thompson et al. (2011)
vi Remington et al. (2001)
vii Almekinders and Louwaars (1999)
viii Almekinders and Louwaars (2002), (1999), (1994),
ix Richards et al. (2009), Richards (1989), (1986)
x Sperling (2008), Sperling et al. (2004), Longley et al. (2002)
xi van Etten (2011)
xii Swaminathan (2004)
xiii Smale, et al. (2011), Sanchez et al. (2009)

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