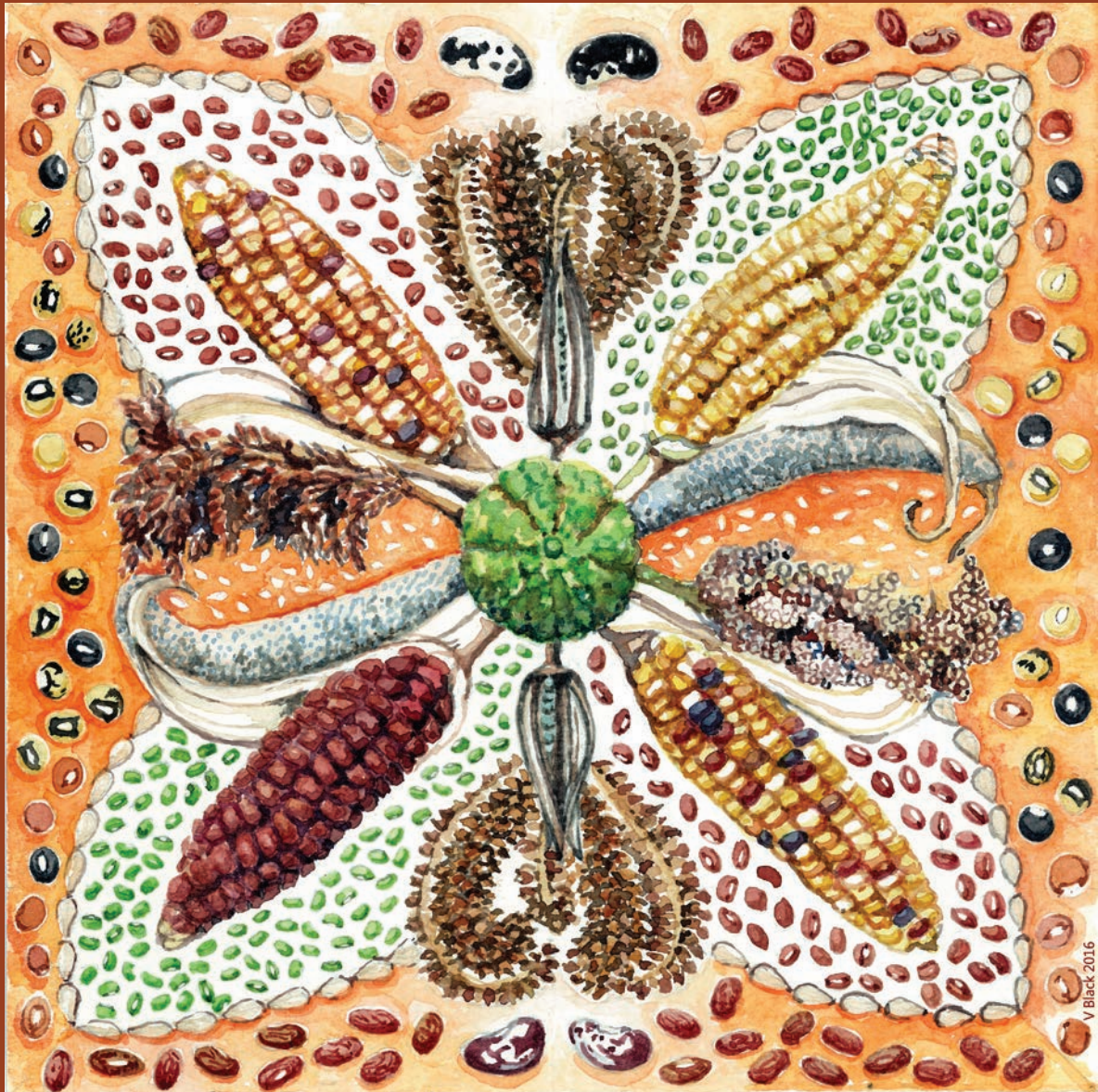


Integration of small-scale farmers into formal seed production in South Africa:



A scoping report

April 2016



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On 7 April 2015 the African Centre for Biosafety officially changed its name to the African Centre for Biodiversity (ACB). This name change was agreed by consultation within the ACB to reflect the expanded scope of our work over the past few years. All ACB publications prior to this date will remain under our old name of African Centre for Biosafety and should continue to be referenced as such.

We remain committed to dismantling inequalities in the food and agriculture systems in Africa and our belief in peoples' right to healthy and culturally appropriate food, produced through ecologically sound and sustainable methods, and their right to define their own food and agriculture systems.

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Cover illustration: Vanessa Black. The illustration was inspired by the beautiful patterns on BaSotho blankets and showcases traditional and farmer varieties of crops grown in SA; highlighting symmetry without exactly mirroring each seed.

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Acronyms

AADP	African Agricultural Development Programme
AATF	African Agricultural Technology Foundation
ACB	African Centre for Biodiversity
AgriSETA	Agriculture Sector Education and Training Authority
APAP	Agricultural Policy Action Plan
ARC	Agricultural Research Council
ARC-GCI	ARC-Grain Crops Institute
ASGISA	Accelerated and Shared Growth Initiative for South Africa
BABS	Bio-prospecting, access and benefit sharing
CAADP	Comprehensive African Agricultural Development Programme
CABI	Centre for Agriculture and Biosciences International
CASP	Comprehensive Agriculture Support Programme
CBD	Convention on Biological Diversity
CBSPS	Community-based seed production scheme
CIMMYT	International Maize and Wheat Improvement Centre
CPSI	Centre for Public Service Innovation
DAFF	Department of Agriculture, Forestry and Fisheries
DEA	Department of Environmental Affairs
DEAT	Department of Environmental Affairs and Tourism
DUS	Distinct, uniform and stable
FAO	Food and Agriculture Organisation of the United Nations
GMOs	Genetically modified organisms
GTZ	German Technical Cooperation
ICRISAT	International Crops Research Institute for the Semi-Arid Tropics
ISTA	International Seed Testing Association
IDC	Industrial Development Corporation
IFSNP	Integrated Food Security and nutritional Programme
IGDP	Integrated Growth and Development Plan
IP	International Seed Testing Association
LDA	Limpopo Department of Agriculture
MAFISA	Micro Agricultural Financial Institutions of South Africa
MALA	Ministry of Agriculture and Land Affairs
MNCs	Multinational corporations
MSV	Maize streak virus
MTSF	Medium Term Strategic Framework
NARS	National Agricultural Research System
NDP	National Development Plan
NGOs	Non-government organisations
NGP	New Growth Plan
NMTIP	National Medium-Term Investment Programme
NVL	National Variety List



OECD	Organisation for Economic Cooperation and Development
OPVs	Open pollinated varieties
PBR	Plant breeders' rights
PIA	Plant Improvement Act
PIB	Plant Improvement Bill
PPB	Participatory plant breeding
PVP	Plant variety protection
PVS	Participatory variety selection
QDS	Quality Declared Seed
QPM	Quality protein maize
R&D	Research and development
SANAS	South African National Accreditation System
SANBI	South African National Botanical Institute
SANSOR	South African National Seed Organisation
SAOSO	South African Organic Sector Association
SGAs	Seed Growers' Associations
TASAI	The African Seed Access Index
UCT	University of Cape Town
UPOV	Convention for the Protection for New Varieties of Plants
WEMA	Water Efficient Maize for Africa



Introduction

This research is part of a three year regional programme being conducted in Southern and East Africa by the African Centre for Biodiversity (ACB). The programme explores the impacts of Green Revolution technologies on small-scale farmers, with a focus on seed and soil fertility. As the programme has evolved we have decided to emphasise alternatives to the Green Revolution under the umbrella of agro-ecology and food sovereignty. This emphasis has required a focus on farmer seed systems as well as the range of existing practices which make support to these a viable option for agricultural development across the region and continent.

South Africa is unique in the region because of the limited role played by small-scale farmers in agricultural production and also in the reproduction and maintenance of crop and seed diversity, relative to the rest of the continent. Further, corporate domination of the seed sector in South Africa may colour the kinds of activities in which farmers choose to engage and from where they source their inputs.

In relation to seed production in South Africa, small-scale farmer involvement comprises:

- i) Farmer-managed seed systems, which incorporate crops and varieties not found in the commercial sphere; and
- ii) The involvement of small-scale farmers in production of seed for formal markets.

For the purposes of our research we have separated these two components. This report focuses on the framework for, and the extent of integration of, small-scale black farmers into formal/commercial seed production in South Africa. ACB will work with partners in South Africa to conduct separate research on farmer-managed seed systems in 2016.

This report looks mainly at the policy and programme level in government to see what kind of support there is for small-scale farmers to produce commercial seed for the market. We are not entirely surprised that there is limited activity in this regard. The report starts with a brief overview of the overall seed system in South Africa; it

broadly characterises commercial, farmer and intermediate seed systems and considers the various activities in the seed 'value chain'. The report then looks at key policies, legislation and programmes with an emphasis on seed laws and considers the implications for small-scale farmer involvement in this sector. Finally it outlines a few projects on community seed production, indigenous crops and black-owned private sector seed production efforts. Actual projects are few and far between, and some suggestions are made about a possible reorientation in thinking—away from attempts to integrate black farmers into saturated commercial seed markets dominated by multinational corporations (MNCs) and towards possibilities for supporting farmer activities outside formal markets.

Key findings are:

- South African agricultural support policy is oriented towards integrating black small-scale farmers into the commercial sector; however, this is within the context of the dominance of large-scale commercial production which makes it extremely difficult for new, small-scale entrants to compete effectively;
- Policy and programmes accept that MNCs control seed production and there are very few public sector efforts to integrate black small-scale farmers into commercial seed production;
- The few efforts there are highlight important lessons for the support of small-scale farmer seed production, including: the importance of participatory methods, with farmers driving the agenda and priorities; the importance of local level farmer organisations; integrated multi-disciplinary teams that incorporate technical expertise, extension, social and process facilitation, and cross-cultural learning; and the need for systematic awareness raising about the diverse crops and varieties and their nutritional, ecological and other benefits;
- An alternative and potentially more useful approach to support for black small-scale farmer seed production could emphasise support within farmer seed systems (outside the formal sector), rather than trying to integrate small-scale farmers into commercial production systems where they stand little chance of competing effectively.



Background to the seed system in South Africa

The South African seed sector is markedly different from that in most of Africa. South African agriculture and seed systems are highly industrialised, commercialised and centralised, dominated by genetically uniform, commercially-bred seed varieties, which have replaced genetically variable traditional varieties also known as landraces, local varieties, or farmer varieties (ACB, 2013). Unlike most African countries, seed production and distribution is corporate-controlled and primarily serves the needs of commercial farmers (The African Seed Access Index (TASAI), 2015:1). Importantly, the commercial system in South Africa extends well beyond maize and certified seed is found in a comparatively wide range of crops and varieties.

A dual production system characterises South African agriculture. A relatively small core of large-scale commercial producers dominate agricultural markets, while a very large assembly of micro- or small-scale agriculturalists produce on the periphery, mainly to supplement household food supplies. The post-apartheid government has adopted a modernisation approach, especially since the late 1990s, with a focus on transforming a layer of subsistence producers into market producers (Makhura, 2001). The stated aims are to support rural employment, income generation, rural development and poverty alleviation (Mpandeli and Maponya, 2014). However, this strategy and its implementation have been ineffective at developing a wide base of surplus producers. Consequently, South African agriculture remains characterised by an increasingly concentrated commercial core and a wide periphery of resource-poor, semi-subsistence producers with a 'missing middle' (Aliber and Hall, 2010).

These dynamics shape South Africa's seed system. On the one hand is a dominant, highly industrialised formal industry, within which large multinational and domestic seed companies produce and sell commercial certified seed primarily oriented to commercial producers. On the other hand is a marginalised,

farmer-managed seed system of unknown extent. There is no easily accessible work in the public domain which maps the farmer seed system in South Africa to date, although there are fragmented support activities by non-government organisations (NGOs) and some tentative public sector initiatives. This will be the subject of a separate piece of ACB research in 2016. In South Africa the long-term dominance of the formal sector has to a large extent reduced indigenous knowledge around seed and increased reliance on the formal system, more than in any other African country (ACB, 2012).

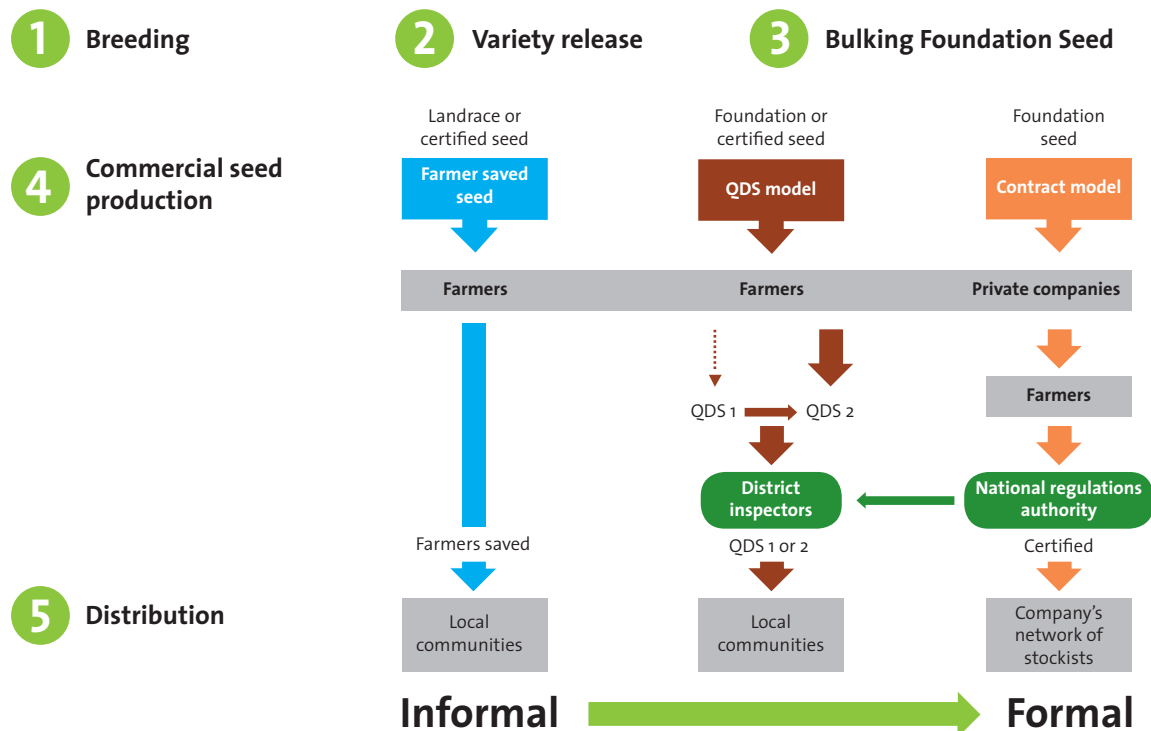
Off-farm (*ex situ*) seed conservation, supported by academic research and corporate breeding, characterises South Africa's formal seed system. It is knowledge and technology intensive, with an emphasis on developing distinct, uniform and stable (DUS) plant and seed varieties. The commercial system focuses on major commodity crops, and particularly on their high-yielding varieties (Lohr *et al*, 2014). Commercial farmers are contracted to produce seed which must be certified by the national regulatory authority. The certified seed is then distributed through corporate agro-dealers (Figure 1).

The result is a highly centralised and oligopolised (an oligopoly is a type of common market comprising a number of firms in competition with each other) seed market that displaces diverse crops and varieties which are considered to have inadequate commercial potential. The commercial system is separated into distinct stages and specialist seed-producing farmers only are involved in the selection, production and multiplication of seed. This has led to both the de-skilling of a preponderance of farmers and the loss of traditional knowledge. The majority of farmers—whether large-scale commercial or subsistence—are separated from seed development and production and have become seed consumers, rather than seed producers. In addition, due to the limited number of agricultural species and varieties produced in the commercial system, genetic diversity is constantly being reduced. The homogenous cropping characteristic of the commercial system, coupled with high pesticide and fertiliser use, have led to negative externalities



Figure 1: Seed systems

Stages



Source: CABI, 2014:23.

and the reduction of ecosystem services and agro-ecological resilience (Lohr *et al*, 2014).

Farmer-managed seed systems (also known as informal seed systems) are systems wherein farmers produce, save and store seed, for their own use as well as to share, trade or otherwise exchange. These systems are characterised by on-farm (*in situ*) seed conservation. Within these systems traditional varieties (i.e. landrace or farmer varieties) are produced, enhanced and traded with no regulatory oversight (Centre for Agriculture and Biosciences International (CABI), 2014). New seed entering the system may be integrated into the farmer system if it is locally reproduced over time. This creates adapted varieties that are not part of the formal seed system and its regulatory framework. The farmer seed system therefore encompasses the total of farmers' seed production, selection and exchange activities (Almekinders, 2000:1). Farmer-managed seed systems have a strong relationship with landraces, which have been selected over

centuries for local contexts in response to natural and human selection pressures. The genetic diversity associated with local varieties, unlike the genetic uniformity associated with modern varieties, is the basis for the resilience of these crops, which also restricts their maintenance and inclusion in the formal seed system (ACB, 2013). Uniformity is central to formal systems whereas diversity and adaptability are central to farmer systems.

There are challenges regarding the provision of commercial seed to resource-poor farmers who require smaller quantities, to be distributed over wide and often inaccessible areas, with a seed demand that varies annually, depending on average yield levels from the previous season and the availability of cash (Almekinders and Louwaars, 2002:22). Farmer-managed seed systems are more integrated, locally controlled and geographically focused. There may, however, be certain weaknesses in farmer seed systems: they may not always facilitate the introduction of new varieties to

refresh agricultural biodiversity, and selection and storage conditions and practices may not always be optimal (Almekinders and Louwaars, 2002:22). There is benefit to be gained from the provision of technical support and extension focused on improving the seed practices of small-holder farmers, within a farmer-driven context, beyond that which is currently offered.

Positioned between the commercial and farmer seed systems is a practice which we term the intermediate seed system. In other countries in the region these are called Quality Declared Seed (QDS) systems or standard grade seed systems. The feedstock is certified and farmers produce seed with some quality control from district inspectors, but with less control than in the formal system. The farmer-produced seed is fed mainly into local markets (Figure 1).

QDS systems were detailed by the United Nations Food and Agriculture Organisation (FAO) in 1996 and revised in 2006, and provide an alternative approach for seed quality assurance. QDS was developed to offer an alternative which can be used for those crops, areas and farming systems in which highly developed seed quality control activities are difficult to implement, or which have relatively little impact. According to the FAO, the major challenge in the design of a QDS scheme is to provide flexibility in implementation, while retaining the basic principles of quality assurance (FAO, 2006:6). QDS therefore attempts to “reconcile the continuing need to improve seed supply to farmers with the desire to reflect and accommodate the diversity of farming systems” (FAO, 2006:6).¹

QDS is reproduced from a seed lot that has been officially tested and approved. This seed must conform to QDS standards and may be called ‘maintainer’s seed’. All maintainers are also seed producers. (Such a system could be adapted for use even outside the QDS system.) All packaging must be labelled with the crop species; the name of the variety; the words ‘quality declared seed’; a reference number of the seed lot; the name of the seed producer; the germination percentage; physical purity

percentage; net weight; date of test; the details of any chemical treatment; and the name of the responsible authority. Labels must be attached in such a manner that it is impossible for them to be reused once they have been removed (FAO, 2006:12). According to regulators, South Africa has not introduced such an intermediary system due to the well organised and efficiently managed formal seed system.

In practice the boundaries between commercial and farmer seed systems are often blurred and exist beyond the control of regulatory and commercial institutions. Protected varieties enter smallholder systems in a number of ways, either by farmers purchasing seed or through developmental projects (ACB, 2015b). These seeds may be integrated into farmer seed systems as they are adapted and blended for local use over a number of seasons. Farmer seed systems play a crucial role in the diffusion of new varieties among farmers, since many farmers often keep and reuse seeds, including hybrid varieties.

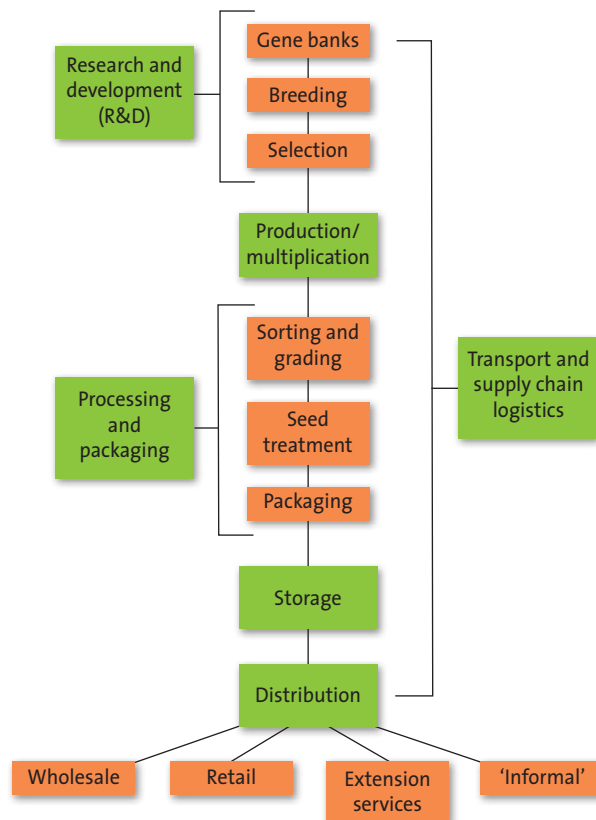
South Africa has adopted seed policies that focus primarily on large-scale seed companies, and ways to regulate them. The underlying logic is that the commercial system will deliver the necessary seed to farmers, and that regulations should be designed to balance the interests of breeders with the interests of farmers, as distinct entities. National seed policies therefore focus on this single model of seed research and development (R&D), production and distribution, and do not provide an enabling environment for the growth of diverse seed development and production models, including small-scale seed companies, cooperative producers and others. Regulations that focus on the commercial sector tend to have negative implications for farmer seed systems and undermine traditional practices and small-scale farmer participation in seed production (CABI, 2014).

The long-term results of this commercial orientation is the concentration of ownership and control in the seed sector. By the 1980s

1. Interview with Joan Sadie, Registrar: Plant Improvement Act, DAFF, 18 November 2015, Pretoria.



Figure 2: A simple seed supply chain



Source: ACB, 2012:25.

virtually all maize crops cultivated in South Africa were hybrid varieties, and were consolidated within six companies (ACB, 2015a). The South African seed industry in 2012/13 was valued at about R5.5 billion, with maize constituting more than 60% (R3.4 billion) of the total. It is a highly concentrated sector with four companies owning 83% of the registered varieties of the top six agronomic crops (ACB, 2015).

In this context it appears that government has a contradictory approach to seed production. On the one hand, commercial production essentially is ceded to MNCs. But on the other hand, the imperative to support and integrate historically disadvantaged black small-scale farmers into commercial agricultural production must necessarily extend to their active involvement in commercial seed production. This paper offers an initial exploration of existing public sector approaches to involving small-scale, resource-poor black farmers in formal seed production systems.

Figure 2 illustrates the seed supply chain. The seed value chain incorporates R&D, production, processing and packaging, storage and finally distribution, through a number of channels. Small-scale farmers can be involved in many parts of the chain, for example through participatory variety selection (PVS) or participatory plant breeding (PPB) in R&D; production/multiplication; and processing, packaging, storage and distribution, as registered or unregistered entities (although the latter are restricted by seed laws that seek to impose specific quality standards on the handling of seed for sale).

Seed production for formal markets is an uncertain business entailing natural risks such as drought, pests, climatic disturbances, contractual obligations and other issues such as theft, etc. In many cases those involved in certified seed production will need access to irrigation and be in less climate extreme environments, and will therefore more likely be those that have a financial resource base (CABI, 2014). According to the mainstream view, seed

production is a unique (specific) business and not any farmer can be a seed grower. Within this context, seed growers are usually lead farmers in the community who understand the technical aspects of seed multiplication. These seed growers are required also to be socially accessible, so that other farmers can readily access the produced seed (Setimela, 2006:11).

Large-scale seed companies deal with only a few commercial crops—hybrids, vegetables and genetically modified organisms (GMOs)—and will contract farmers who manage environmental variation through mechanisation. National seed companies contract commercial and medium-level farmers to produce improved varieties, with some level of exclusivity. In South Africa many of the activities such as breeding, seed production and marketing are conducted by the South African National Agricultural Research System (NARS), including the (corporatised) Agricultural Research Council (ARC) and private companies. The ARC does R&D for new varieties but does not itself produce seed; once a variety is developed, it contracts farmers to produce seed and receives royalties for seed sales or the licensing of sales.

Overview of the key policy, legislation and programmes regarding small-scale farmer seed production

South Africa has two main pieces of legislation which affect the seed sector: the Plant Breeders' Rights (PBR) Act No. 15 of 1976 and the Plant Improvement Act (PIA) No. 53 of 1976. These laws are administered by the Department of Agriculture, Forestry and Fisheries (DAFF). They are aimed at regulating seed companies, seed R&D and

commercialisation. The majority of small-scale farmers and informal seed companies may not be aware of these laws or the impact these laws have on their operations and livelihoods (Netnou-Nkoana et al, 2015). Within the Department of Environmental Affairs (DEA),² the National Environmental Management: Biodiversity Act No. 10 of 2004 regulates ownership of genetic resources and access and benefit sharing. More broadly, other policy and legislation with a bearing on black farmer seed production can be found within areas such as land, agriculture, water and others.

Plant Breeders' Rights

South Africa is a member of the 1978 Act of the Convention for the Protection for New Varieties of Plants (UPOV 1978) but is not yet a member of UPOV 1991. Accordingly, South Africa is not bound by the provisions of UPOV 1991 and there is no legal reason for it to implement UPOV 1991. Nevertheless, South Africa's current PBR Act is based principally on UPOV 1991, as is the revision of the PBR Act, the PBR Bill. UPOV 1991 is a restrictive and inflexible legal regime, focused solely on promoting and protecting the rights of commercial breeders who develop genetically uniform seeds/plant varieties suited to mechanised large-scale mono-cropping agriculture systems. It severely limits farmers' rights to recycle, exchange and trade farm-saved seed of protected varieties. However, the PBR Bill does contemplate exemptions to breeders' rights in regulations to be made, regarding the type of crop, size of land, the income of farmers, and so forth. Nevertheless, it is doubtful whether these exemptions will sanction the unfettered exercise of farmers' rights as provided for in the International Treaty on Plant Genetic Resources for Food and Agriculture. The Treaty affirms the rights of farmers to save, use, exchange and sell farm-saved seed and other propagating materials, and participate in decision-making and the fair and equitable sharing of the benefits arising from the use of plant genetic resources for food and agriculture. It requires contracting Parties to take responsibility for realising farmers'

2. Formerly the Department of Environmental Affairs and Tourism (DEAT).



rights and take measures to protect and promote farmers' rights. South Africa is not a contracting Party to the Treaty.

The PBR Act establishes the terms of ownership rights over genetic materials and protects the rights holders of protected varieties, prevents unlawful usage, and ensures that royalties may be claimed. The Act stipulates the manner in which the rights holder is to research, develop and produce new varieties. Use of a protected variety without the consent of the rights holder is unlawful (ACB, 2012).

Plant variety protection (PVP) or PBR laws justify exclusive rights to plant varieties on the basis that investment in R&D is a very costly activity, and that innovations and improvements will not occur without the effective protection of such rights. While the intellectual property (IP) of private breeders is fiercely protected in the legislation, the same cannot be said for the traditional and indigenous knowledge that formed the basis for much of this innovation. Exclusive rights may be granted to an improved variety with a single adaptation, even if the underlying germplasm was developed by farmers and the public sector over a long period.

Exclusive rights to varieties are granted for 20–25 years, depending on the plant. During this period, “the breeder has the choice whether they want to commercialise the variety and whether to license it out or not. PBRs lasts for 20 years. After five years the Registrar of Plant Breeders Rights may, in the national interest, issue a compulsory license, but this has never happened”.³

Plant Improvement

The PIA regulates seed production and seed quality standards. These regulations are crop specific and are outlined in Table 4 of the Act. It aims to protect the end user of the seed, so that they are confident of the quality of the seed and know what they are planting. The purpose of PIA is to regulate the quality of plants and propagation material intended for

cultivation and sale.⁴ It outlines:

- The registration of types of businesses and premises involved in the cultivation and sale of plants and propagation material;
- The registration and national listing of plant varieties;
- Conditions of sale, physical quality standards and labeling requirements for plants and propagation material;
- Import and export control of plants and propagation materials; and
- Improvement schemes.

South African legislation is aligned with international seed standards and is a member of the International Seed Testing Association (ISTA), which establishes uniform and standard procedures for seed sampling and testing. South African seed certification schemes follow that of the Organisation for Economic Cooperation and Development (OECD). This is required for cross-border sales and, generally speaking, to ensure and maintain genetic purity during the reproduction process. Seed policies in South Africa have been strongly influenced by UPOV, which specifies DUS standards and variety denomination and testing guidelines, amongst other elements, for variety registration and regulation. However, legislation on seed quality and variety registration creates problems for those who are developing and maintaining varieties which may not be able to fulfil the DUS criteria (ACB, 2013). These criteria may not be entirely appropriate in local contexts, for example, where local adaptation and variation may be more important than whether the seed is distinct from another variety or is precisely uniform. Stability refers to a seed being reproducible with the same results over a number of plantings. In this regard it is difficult to see how hybrid seed, which degenerates rapidly after the first planting, can be considered to be stable.

Table 2 (Provisions relating to the recognition of varieties) of the PIA lists all varieties that have been released and are eligible for production and marketing in South Africa. The National Variety List (NVL) comprises 120

3. Interview with Eddie Goldshagg, Technical Manager, SANSOR, 4 December 2015, Pretoria.

4. Interview with Joan Sadie, Registrar: Plant Improvement Act, DAFF, 18 November 2015, Pretoria.



plant types including all major vegetable, agronomic and forage crops. If a variety is not on the NVL and is not being sold commercially, it can be distributed freely. Seed cannot be sold commercially if it is not on the NVL and varieties cannot be sold under any name other than their own.⁵ Seed varieties that are not on the NVL are not regulated by the Act.⁶ This clearly has implications for the sale of farmers' varieties which have not been subjected to the rigorous certification, regulation and inspection procedures prescribed by the PIA.

Table 8 (Varieties in respect of which certification is required) of the PIA (the Closed Variety List) lists those varieties which need to be certified to be commercially sold or traded. This Table currently includes 123 varieties of 27 plant types. There are a few exceptions to the restrictions on the sale of uncertified seed and these pertain to unlisted open pollinated varieties (OPVs) which may be sold in prescribed quantities.⁷

"It is unlawful in terms of the PIA, to sell varieties that are not listed on the National Variety List. For those species on the Closed Variety List (Table 8), it would also need to be tested, and the name listed. If you sell a listed variety, then it must comply with the variety description. If it has a PBR, you would have to have an agreement with the holder of the rights. But if you sold a listed variety (not on Table 8) as another variety or without a name, then you transgress the Act. You cannot sell a variety under another name than that [which] has been listed. If it's not listed, you are not allowed to sell it. And if you sell it under another name that would be fraud, actually."⁸

As mentioned above, the PIA provides guidelines for particular crops, based on international OECD standards, with regard to monitoring seed quality, varietal identity and varietal purity. South Africa's adoption of these international standards has allowed it to

maintain certain standards for both national and international markets (DAFF, 2015a:7). Before 1989 certification and testing was done by the South African government. The South African National Seed Organisation (SANSOR) was established in 1989 and is currently responsible for licensing PBRs. It also manages and administers the national certification scheme and reports to the PIA registrar.

SANSOR trains and authorises companies, inspectors, or provincial government inspectors to do the certification, i.e. to do the field inspections, take samples, etc. The testing must be done at a registered seed testing laboratory. SANSOR does not do the inspections, it merely administers the Scheme.⁹ Inspection of the seed units is done at different stages of plant physiology and samples are presented for certification, in order to ensure that good quality seed is made available to farmers (Mkhari *et al*, 2006).

As already mentioned, the PIA is in the process of being amended and will be replaced by a revision which is currently in the form of a Bill. Section 22, Chapter 4 of the Plant Improvement Bill (PIB) also prescribes requirements for the sale of seed. It stipulates that a variety must be on the NVL, must be sold under the approved denomination or synonym (as indicated on the NVL or Regional List), must comply with quality standards for cultivation and sale, and be labelled in the prescribed manner with required information (DAFF, 2015c).

There are exemptions to these provisions in the PIB. Any OPV which is not on the NVL (Table 2) and which is sold for cultivation and sale on a non-commercial scale, is exempted from the provision of the law (DAFF, 2015c). The exception regulates the number of seeds that may be sold per year, and the size of the packaging in which it is sold. This exception is intended to allow the trade of small quantities of seed, mainly to accommodate small seed

5. Interview with Eddie Goldshagg, Technical Manager, SANSOR, 4 December 2015, Pretoria.

6. Interview with Joan Sadie, Registrar: Plant Improvement Act, DAFF, 18 November 2015, Pretoria.

7. Interview with Joan Sadie, Registrar: Plant Improvement Act, DAFF, 18 November 2015, Pretoria.

8. Interview with Eddie Goldshagg, Technical Manager, SANSOR, 4 December 2015, Pretoria.

9. Interview with Eddie Goldshagg, Technical Manager, SANSOR, 4 December 2015, Pretoria.



sellers of heirloom, organic and OPV seed. In light of the fact that seed trade regulations are highly onerous and complicated, these intended exemptions in the PIB provide an avenue for trading experimental, organic and heirloom seeds without regulation. Small seed companies who benefit from these exemptions tend to focus on household and amateur gardeners, and therefore are not seen as competition for the larger seed companies, or significant in terms of national food security. In these exemption cases seed quality, germination rates, etc., are not monitored. Many of these companies are well-resourced and tap into a niche market, which allows for market/self-regulation.

The PIA does not address farmer seed systems and it is not obvious what the legal implications would be for non-compliance, for example, on the part of small farmers to whom the exemptions do not apply, or how these will be enforced. It also does not differentiate between different types of seed enterprises, or between farmer and commercial seed sectors. Thus significant questions remain, particularly with regard to the sale and production of unlisted varieties in quantities that exceed what will be permissible, under the exemptions, and/or which do not comply with packaging and labelling requirements. The implications of these and other questions for the future of farmer-managed systems and indigenous varieties remains unclear.

There is a clear incongruence between the current South African seed policy and South Africa's development plans. In the PIB, the DAFF emphasises shifting the focus towards "creating an enabling environment for the agricultural sector that is accessible and inclusive of all participants, irrespective of the size of their contribution to the sector. This is to be achieved through the provision of efficient and appropriate services via its various agricultural support programmes and improved regulatory systems" (DAFF, 2015c:32). It also identifies the need to strengthen "existing commercial production while simultaneously improving the participation

of new entrants and facilitating smallholder farmers to make the transition to mainstream agriculture" (DAFF, 2015c:32). This said, there is no mention of providing support to new entrants within the seed sector. DAFF responds when there is interest from individuals, but does not actively promote the participation of small-scale farmers in seed production.¹⁰

Bio-prospecting, access and benefit sharing

The DEA's National Environmental Management: Biodiversity Act No. 10 of 2004 controls access to South Africa's indigenous genetic resources. It seeks to ensure continued access to sources of genetic material for food, agriculture and forestry (Policy objective 3.2) to "initiate a process of national and local consultation, whereby the South African farming community, and small-scale farmers in particular, fully participate in the shaping, definition, and implementation of measures and legislation on Farmers' Rights" (DEAT, 1997:67). This piece of legislation supports "research, training, and institutional capacity-building activities to empower small-scale farmers and other farming communities in the acquisition, conservation, development and use of landraces, and of indigenous and traditional livestock breeds and plant varieties" (DEAT, 1997:68).

Bio-prospecting, access and benefit sharing (BABS), is important to consider when traditional knowledge, particularly around landraces, is used to develop new varieties. In ensuring the sustainable utilisation of indigenous biological resources, and promoting fair and equitable sharing of benefits, the DEA, through the Biodiversity Act, developed the BABS regulations which came into effect in 2008. These regulations govern the use of indigenous biological resources and associated traditional knowledge targeted for bio-prospecting with the intention to commercialise the end product. The Biodiversity Act defines bio-prospecting as "any research on, development or application of indigenous biological resources for commercial

10. Interview with Walter Mokgobu, Agronomist, DAFF, 18 November 2015, Pretoria.



or industrial exploitation and includes:

- Systematic search, collection or gathering of such resources or making extractions from indigenous biological resources;
- Utilisation for purposes of any information regarding traditional uses of indigenous biological resources by indigenous communities; or
- Research on, application of, development or modification of any such traditional uses of the indigenous biological resources”.¹¹

This legislation further provides for the national implementation of the Convention on Biological Diversity (CBD) and the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilisation. The Nagoya Protocol was adopted in October 2010 and signed by South Africa in May 2011. The section on benefiting biodiversity contains the objective to promote and develop economic opportunities that are compatible with the conservation and sustainable use of biodiversity. Although seed production is not specifically mentioned, there is room for programmes that have economic potential and simultaneously rehabilitate and maintain biodiversity (DEAT, 1997:80).

The DEA acts as the ‘champion’ of biodiversity conservation and sustainable use in the South African political landscape, and administers compliance with South Africa’s obligations under the CBD. Due to the cross-sectorial nature of biodiversity other government departments also play key roles; these include DAFF, and the Departments of Trade and Industry, Housing, Rural Development and Land Reform, Health and Water, amongst others. It is crucial that there is “commitment to cooperating with one another, and to developing sectoral-specific plans and budgets to reflect how biodiversity considerations will be incorporated into the activities of departments” (DEAT, 1997:87).

Related policies, strategic plans and programmes

Section 8.7 of the White Paper on Agriculture (the Ministry of Agriculture and Land Affairs (MALA), 1995) emphasises the role of landraces and the indigenous knowledge surrounding landraces within biotechnology and other agricultural research. Section 2.3 contains a discussion of locally-adapted seed varieties, in which seeds adapted to particular agro-ecological conditions are identified as being important, while drought conditions are recognised as a “normal phenomenon in agriculture” (MALA, 1995:7). In various national policies and strategic frameworks, including the National Development Plan (NDP), the New Growth Plan (NGP), the Medium Term Strategic Framework (MTSF) (2015–2020), the Agricultural Policy Action Plan (APAP) and the Integrated Growth and Development Plan (IGDP), agriculture is identified as critical for employment and food security. However, there is no mention of seed production and no clear vision of the role of, and support to, black small-scale farmers in the seed sector.

In the 2014–2019 MTSF, Outcome 4 (Decent employment through inclusive growth), Outcome 7 (Comprehensive rural development and food security), and Outcome 10 (Environmental assets and natural resources protected and continually enhanced), provide opportunities for upstream and downstream agricultural support. But again there is no mention of the role of seed production, except where there is a mention of private sector improved seed provision.

In DAFF’s strategic plan for 2015/16–2019/20, seed bank construction is mentioned twice—in Limpopo (Mthali), and in the Eastern Cape (Sterkspruit) (DAFF, 2015b). This said, respective provincial strategies do not mention any programmes for seed construction. There are no apparent programmes that focus directly on including black, small-scale farmers in certified seed production, let alone discussions on strengthening and supporting farmers’ seed systems. DAFF mentioned in an interview that

11. www.environment.gov.za



where there is interest, they are able to provide technical assistance.

The draft National Policy on Organic Seed Production mentions the development of a seed production programme in collaboration with the South African Organic Seed Organisation (SAOSO) and the establishment of organic seed banks (DAFF, n.d.). The draft policy recognises that most seeds are developed for agro-chemical production, and indicates the need to promote organic seeds. In March 2015 the South African National Accreditation System (SANAS) launched a process for the accreditation of organic production and processing (SANAS, 2015) but this does not specifically focus on seed.

The main programmes within DAFF that may have value in the seed discussion include: Sustainable Resource Management; Farmer Support and Development; Agricultural Economic Services; Research and Technological Development Services; and Rural Development. Despite these programmes, currently there is no provincial strategic document that discusses seed sector transformation specifically, although there are broad statements on job creation (NDP, MTSF, APAP, NGP), education and training in agriculture production (MTSF), cooperative and enterprise development (MTSF), broadening market participation (APAP); upstream and downstream (NDP); unlocking agricultural potential and opportunities (NDP); improving food and nutritional security (Fetsa Tlala); and smallholder farmer development and support (technical, financial and infrastructure) for agrarian transformation. Undoubtedly there is space for work with black farmers to enhance their seed systems, but there is no translation of policy into specific budgeted activities for seed support. Government officials have indicated their openness to working with those who approach it with ideas that can move towards these objectives.

In the 1997 White Paper on the Conservation and Sustainable Use of South Africa's Biological Diversity, policy objective 1.8 aims to support, complement and enhance *in situ* conservation through strengthening measures for the *ex situ* conservation of components of biological diversity. The responsibility for *ex situ*

conservation in South Africa lies with a variety of government, parastatal and private entities. Most gene and seed banks are held by the DAFF and by institutes of the ARC. The University of Cape Town (UCT), the South African National Botanical Institute (SANBI), other universities and the DEA also have gene banks.

In situ conservation refers to the conservation of ecosystems and natural habitats, the maintenance and recovery of viable populations of species in their natural surroundings and, in the case of domesticated or cultivated species, in the surroundings where they have developed their distinctive properties (DEAT, 1997:103). *In situ* conservation is recognised in policy as being central to the strategy to conserve South African biodiversity, with *ex situ* methods supporting, complementing, and enhancing *in situ* conservation. Practical work in this regard is in its infancy. Scant information exists on the use of indigenous and traditional varieties or landraces. Such plants are still utilised by subsistence farmers and are highly valued as a food source in rural areas, but no formal *in situ* conservation programmes are in place.

As part of African integration the African Agricultural Development Programme (AADP) and the National Medium-Term Investment Programme (NMTIP) are used to implement the Comprehensive African Agricultural Development Programme (CAADP). CAADP focuses on agriculture-led macro-economic growth in African countries, and in South Africa there is a clear focus on "redressing the skewed participation and historical dualism and imbalance" that exists within the South African agricultural landscape (Republic of South Africa, 2007). There is mention of the opportunity for further research and training in seed preservation within centres of production. The redressing of this imbalance, through agricultural support, enterprise development, and bursaries for black and historically disadvantaged social groups who wish to enter the agricultural sector, is based on the commodity/product value chains and diversification through the Accelerated and Shared Growth Initiative for South Africa (ASGISA). It is not clear whether this Mbeki-era initiative still exists.



The government regards skills development as a major success of ASGISA and, through the Comprehensive Agriculture Support Programme (CASP), a number of agriculture cooperatives have been established, trained and supported, and operate along the agricultural commodity value chain. The accredited agricultural training programme offered by the Agriculture Sector Education and Training Authority (AgriSETA) is central to this, with the Micro Agricultural Financial Institutions of South Africa (MAFISA) being an integral part of access to land and finance. There is no mention of the role of seed along the value chain.

A number of projects were started as part of the Integrated Food Security and Nutritional Programme (IFSNDP) and the Special Programme for Food Security, such as Ziyazondla (Eastern Cape), Siyavuna (Kwa-Zulu Natal), and Asibuyele Masimi (Mpumalanga). These programmes focus on food production and nutrition awareness but do not work on seed production.

DAFF and ARC are working to revive the production of indigenous crops as part of DAFF's R&D Programme, while also stimulating consumer interest and activities along the seed value chain. They still have a way to go before involving others beyond ARC in seed multiplication¹² and are currently still trying to understand who is growing these crops, how the seed is conserved, and by whom. DAFF is driving these programmes in partnership with a number of other government departments. But even this work is designed towards integration into the formal regulatory, commercial and marketing system. To this extent a few indigenous varieties have been registered, including cowpea, millet and sorghum, some of which already have an established market, while others do not. Currently cowpea is regulated (listed) and varieties can be registered and certified for marketing. ARC is currently researching other varieties.

The resilience and food security value of indigenous crops in the face of climatic change and uncertainties is clearly recognised. This is why programmes and partnerships have been developed—but there is still much work to be done as they are still in the early research stages.¹³ There is little information on these crops and farmers feel there is no market for indigenous seeds/crops. South Africa is lacking in the development of the indigenous seed and crop sector, while other African countries have developed production, cooperatives and new products.¹⁴ These programmes use various methods to educate and inform farmers and consumers about the nutritional value of indigenous crops. They focus on crop production before looking at seed production, certification, skills transfer and enterprise development. South Africa's ARC is currently involved in seed improvement and the multiplication of indigenous varieties, but has yet to involve farmers in the multiplication of seed. ARC provides DAFF with the seed, which it distributes, as part of their awareness creation initiative. Sponsors are required to support further processes that will train farmers to be able to produce seed.

Seed production activities by small-scale farmers for formal markets in South Africa

Despite the South African government's orientation towards the commercialisation of small-scale farming, very few efforts have in fact been made, so far, to bring black small-scale farmers into certified seed production. This section indicates the few projects we have been able to identify from an initial scan.

12. Interview with Moloko Mojapelo, Agronomist, Plant Production Directorate, DAFF, 14 December 2015, Pretoria.

13. Interview with Moloko Mojapelo, Agronomist, Plant Production Directorate, DAFF, 14 December 2015, Pretoria.

14. Interview with Moloko Mojapelo, Agronomist, Plant Production Directorate, DAFF, 14 December 2015, Pretoria.



Table 1: Registered Seed Units in Limpopo Province in the 2004/5 seasons

Seed Units	Planting Date	Hectares	Status
Maraxwe	6 February 2004	12	Certified
Tshiombo Block II	6 February 2004	10.5	Certified
Tshiombo Block III (Mathombo-Tshwuka)	29 February 2004	16	Certified
Mbahela	1 September 2004	18	Certified
Spitzkop	4 December 2004	15	Certified
Maraxwe	10 January 2005	18	Certified
Tshiombo II	24 January 2005	18	Certified
Mianzwi	24 January 2005	9	Certified
Tshiombo Block III	10 January 2005	9	Certified
Total		107.5	

Source: Mkhari *et al.*, 2006:15.

Limpopo Community-Based Seed Production Scheme

The most cited example of small-scale seed producers comes from the work done in Limpopo Province, and the community-based seed production scheme (CBSPS) that is operating with the support of the Limpopo Department of Agriculture (LDA). The CBSPS was initiated in 2000 in the Vhembe and Capricorn Districts and aimed to address the seed security of small-holder farmers (Mkhari *et al.*, 2006). The project was led by DAFF with support from a variety of stakeholders in the seed sector, including the International Maize and Wheat Improvement Centre (CIMMYT), the ARC-Grain Crops Institute (ARC-GCI), SANSOR, DAFF Genetic Resources, LDA colleges, Progress Milling, private seed companies, the German enterprise Gesellschaft Technische Zusammenarbeit (German Technical Cooperation) (GTZ) and others. The scheme aimed to: expose farmers to different seed varieties; enable them to identify preferred varieties according to their own criteria; and assist them to multiply preferred varieties of seed in order to guarantee local seed security and make seed production profitable (Centre for Public Service Innovation (CPSI), 2007).

The main activity of the CBSPS in Limpopo is the production of certified seed of maize, grain sorghum and sometimes dry beans. This is

effected by following all the requisite steps of seed certification as prescribed by SANSOR in the South African Seed Certification Scheme. In the past the project has sold maize seed to Botswana.

Farmers are involved in variety selection so that they are exposed to new varieties and can decide which of them they prefer. Once they have selected their preferred varieties they are trained to produce seed, both for local seed security and income generation (Mkhari *et al.*, 2006, 14). According to Makgato Mathipa, the Agricultural Manager at the LDA, the initiative "... is part of the programme by the Department to introduce farmers to use certified seed of improved varieties. The main objective is to have farmers produce seed of their own preferred varieties for their own farming systems. Secondary to that is to promote income generation through selling their seed to neighbouring farmers. The [long term] vision which addresses food security talks to the establishment of a farmer-owned seed company."¹⁵

SANSOR worked closely with farmers to ensure that seeds could be certified and four officials from LDA completed the course and became authorised seed inspectors. The first seed was certified in 2003 and the project was officially launched in the same year. The Madzivhandila College of Agriculture was registered as a

15. Interview with Makgato Mathipa, Agricultural Manager, Limpopo Department of Agriculture, 24 December 2015, per email.



seed establishment with DAFF (then the Department of Agriculture) and was authorised to conduct seed cleaning and packaging. Once the local demand for seed had been met, seed producers sold excess seed to the external market.

Ten Seed Growers' Associations (SGAs), one in each village, were established in the Vhembe district. A seed growers' service cooperative was registered in 2004 and seed collection/processing points were identified. Farmers produced seed individually but obtained collective benefits through the cooperative. These included reduced transport costs, reduced input costs (for treating the seed, etc.), liaison with LDA and SANSOR for the inspection and certification of seed, the marketing of surplus seed, and provision of basic seed to seed producers.

Local SGAs were given responsibility for managing the collection processing points, whose functions included the storage of seed after harvests; transportation of seed from farm to Madzivhandila; and managing and storing equipment and supplies. In 2004 three seed units were planted, harvested and certified, but due to the poor basic seed quality obtained from Capstone Seed Company, maize streak virus (MSV) and poor soil fertility management, yield was low. ARC provided basic seed—a quality protein maize (QPM)—to farmers for multiplication. Initially the basic seed was provided free of charge, but later on farmers had to pay R8/kg for their basic seed.

In the 2005/6 season 300 tons of certified ZM521 seed was produced. In 2006/7 100 ha of ZM521, ZM423, ZM523 and ZM623 were planted. The certified ZM521 seed was supplied to smallholder farmers through community-based stockists. The village in Tshiombo produced 13.33 tons of seed during the last season in 2004, which was processed, treated and packed at Madzivhandila. This project is still underway, and has received a number of awards for its innovation in the seed sector. The Capricorn District was home to three projects including Jack Mafarane (33 members), Mapeu (10 members), and Mashushu (20 members). There is also a project in Lekgothoane. In 2006, farmers in Limpopo were selling seed at R17.50/kg, although the production and processing

costs were higher, at R21.60/kg. This was due to the invisible and visible costs, and particularly the costs associated with the umbrella body organisation.

Lessons from these projects include:

- there are difficulties associated with introducing something new, and as a first for the Department there were many hurdles to be faced
- it is possible for people to learn new skills, including methods of planting such as conservation tillage, using ripper planters to avoid soil erosion, and using vetiver and napier to prevent soil erosion and control cutworms
- it is important to use familiar language
- people's lives can be improved through innovative projects
- team work produces the best results; and
- resources must be shared.

In order to scale-up and also replicate such projects, Mr Matlebjaane from the LDA suggested that relevant officials be involved in the process—to ensure that projects are organised efficiently, that there is a willing farming community, as well as proper social facilitation elements, to ensure sustainable outcomes (CPSI, 2007).

Limpopo has enjoyed some success regarding small-scale certified seed production. In a study conducted by Mpandeli and Maponya (2014), the researchers met with a variety of farmers among whose number many had been trained in previous years by ARC, DAFF, SANSOR and Madzivhandila, on the production of hybrid seed. As part of that study the cost of inputs, market interactions, costs of transport and irrigation, and credit availability were identified as major challenges for small-scale food production. Less than 5% of respondents in the Tshiombo area viewed the availability of inputs, and especially seeds, as a problem, compared with other areas that were part of the study. The authors suggest that this may be due to that fact that they received training to produce seeds. A few farmers indicated that the use of hybrid seeds was part of their adaptive strategy, as these seeds produced good yields (Mpandeli and Maponya, 2014). Some farmers within the project had access to irrigation and were producing their own hybrid seed, which



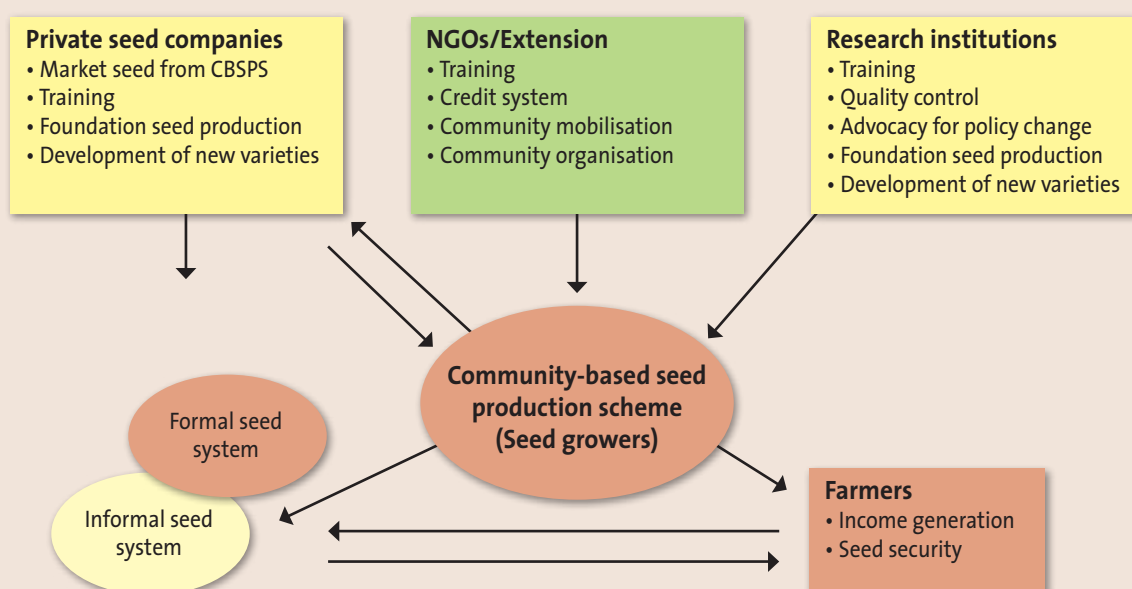
Community-Based Seed Production Schemes (CBSPS)

CBSPS have been initiated, mainly, to assist farmers to select, multiply and save the seed of improved OPVs, to meet their own needs and those of surrounding communities (Bänzinger, 2006). In areas where the formal seed sector is unreliable and has poor infrastructure such schemes have been initiated mostly by NGOs. This is an interesting approach and further exploration is required to determine how it can contribute to a reliable, locally-driven and locally-controlled seed system in which a unique niche may exist for small-scale farmers.

Most of the CBSPS which have been started in Southern Africa have not survived after the removal of external support when seed shortages were once again experienced (Setimela, 2006). A variety of factors may be responsible, including:

- Farmers and NGO staff have inadequate knowledge and skills regarding seed production;
- Information does not reach small-scale farmers, possibly due to the limited number of extension workers;
- Varieties are not promoted by breeders/researchers and therefore remain unknown;
- The demand is unreliable, particularly for crops which are considered unprofitable, such as mung beans, cowpeas, millet, and maize OPVs;
- Generally, projects do not have an exit strategy;
- Poor networks between CBSPS and researchers, seed companies, markets, and extension services;
- Many improved varieties do not meet the needs of farmers;
- The lack of a community-based seed production policy; and
- Isolation—distances between markets and services are often problematic for small-holder farmers.

Figure 3: Important linkages in community-based production schemes



Source: Setimela, 2006:12.

The success of such interventions are linked to integration, especially with appropriate technical support and extension services. Setimela (2006) suggests that the success of CBSPS depends on the support from multiple entities within both the private and public sectors, including government, NARS, NGOs and extension workers, the private sector, and research communities.

The issue of markets for certified seed poses another challenge. Interventions may be required to stimulate market demand, otherwise it may be better for seed production to target household needs. Market demand is based on whether there are people who are interested in the crop or variety being produced. This has a knock-on effect on the extent to which farmers will be prepared to go to the effort of producing certified seed for a specific crop or variety. The demand for the product cannot be separated from the demand for the seed. This enterprising aspect of small-scale farmers and seed production has benefits in the form of possible income, but there are also limitations regarding what will be viable to produce. Various factors need to be taken into account: imposed restrictions, access to the seeds, contractual obligations associated with production, and the ability to register local varieties, amongst other potential challenges for small-scale farmers.

influenced the ability of farmers in the area to sell produce provincially and nationally. However, access to markets is an issue but this was not expressed in relation to seed.

ARC-GCI indigenous seed production

ARC's Grain-Crops Institute (ARC-GCI) has been involved in some work on indigenous seed since at least 2002. Between 2002 and 2004 ARC-GCI started a project to evaluate a variety of sorghum cultivars, using participatory variety selection (PVS). The objective of the project was to identify improved grain yields and agronomic performance. As an outcome of this process four sorghum varieties were released.

The PVS process includes identification of between 6 and 10 varieties to take to the farmers for testing on-farm. Farmers use the varieties which they are already growing as a benchmark for testing the new varieties, which grow alongside them. They can then test the difference in yield, maturation time, taste and consistency, such as in the case of sorghum, when made into a porridge. The traits the farmers selected included drought tolerance, yield, early maturation and taste.¹⁶

According to Mr Shargie from ARC-GCI, when selecting participants for the PVS trial, it was important to identify farmers who already were growing sorghum, in areas where extension workers were available, and reliable, in terms of managing the process. They planted in a number of areas aiming for a representative experience of Limpopo, so that outcomes could be widely distributed. It was also important to find sites where there was less likelihood of livestock destroying the crops.

Following the PVS process, four varieties were released, one being *Macia-SA*. *Macia* is a landrace originally from Southern Africa; it is an OPV that performs equally with hybrids under harsh conditions (Shargie, 2016). The germplasm came from the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT). The seed was then multiplied and evaluated. Four varieties were released as a result of this process, two of which have intellectual property rights— *M66* and *M48*.

Thabo Ramashala, Director of Crop Production at DAFF, is known to be passionate about indigenous crops and emphasises the need for evaluating traditional crops for both nutritional and food security benefits, as well as the

16. Interview with Nemera Shargie, Senior Researcher, ARC-Grain Crop Institute, 15 April 2016, Tlokwe/Potchefstroom.



Table 2: Model scheme for community-based sorghum seed production

Seed source	Basic seed from public sector breeding programme or a seed company, currently ARC
Transport of source seed to seed producers	LDA/ARC
Sourcing of other inputs (land preparation, fertiliser and pesticides)	Seed producers group or with some support from public funder
Training of seed producers	ARC/SANSOR
Certified seed crop land registration and inspections	Paid by seed producer group
Quality control	DAFF Seed Quality Laboratory paid by seed producers
Cleaning, storing, packaging, and marketing	Processing facility at Madzivhandila/seed producers/LDA
Output	Certified seed
Sustainability Issues	Who is taking over the role of DAFF/LDA in the long term? (I.e. re financial support for supply of free basic seed, transport, organisation)
Other issues	Marketing of certified sorghum seeds was a challenge for some seasons, but the current season's demand was high and all seed produced was taken

Source: Shargie, 2015.

need to reduce dependence on the few crops produced by industrial agriculture.

In 2008 the ARC-GCI received funds with which to produce the basic seed and train farmers and the sorghum seed production project was officially launched. SANSOR was brought in to advise farmers about isolation distances, pest control and other agricultural practices for producing certified seed, and to train extension officers. Farmers and farmer associations were selected according to their willingness to grow seed, the agro-ecological suitability of individual farms, the availability of facilities, sufficient isolation distances, and access to agricultural implements such as tractors, etc.

The ARC produced 400 to 500 kg of basic seed and, together with the extension officers from Limpopo, identified the cooperatives, communities, and farmer groups for work on seed production. The project ended in 2013/2014 when the funds came to an end.

During that time, basic seed was supplied to farmers free of charge. While it was intended that someone in the formal sector would be able to produce breeder seed, to sell to the seed producers, this did not happen.¹⁷

The two projects funded by DAFF were the Difahlane project in the Makhuduthamaga municipality (12 participants), and the Ka-Dikweneng project in the Lepelle-Nkumpi municipality (4 participants). The model for the CBSP projects is outlined in Table 2.

Initially there was a limited market for the seed but at a later stage the seed produced was bought for government programmes, e.g. by the Industrial Development Corporation (IDC), who would buy seed in bulk (800 kg at a time) with which to supply smallholder farmers.

The seed producers made use of the Madzivhandila College of Agriculture for cleaning, packing, processing, etc. Mr Shargie

17. Interview with Nemera Shargie, Senior Researcher, ARC-Grain Crop Institute, 15 April 2016, Tlokwe/Potchefstroom.



discussed how, unlike 10 to 15 years ago, the newer seed laws have changed in terms of trading seed, making it very hard for farmers to trade their seed. This creates huge constraints for farmers who are trying to access improved seed produced by other small-scale farmers.

Seed producers would sell seed in 25 kg packages. One of the groups was producing about nine 25 kg packages of seed in a growing season. Certain areas, where it takes about four months from planting to harvest, can have from one to three harvests annually. However, in these areas there is usually one harvest per year, since there is some frost and it is very dry.

An important lesson from these projects is that strong partnerships are required between different interest groups and stakeholders.¹⁸

These projects are still active, although they do not receive formal support from the ARC, and the LDA is still involved, to some extent. Currently the ARC sends basic seed when requested, even though funds are no longer available. It would be useful to follow-up with the extension workers and farmers involved, to see what progress has been made since the funding was cut, how the sorghum seed is being distributed, and how they have operated during the recent drought in South Africa (2015–2016, so far).

A key question is whether the interventions that were designed to produce certified seed are the best use of resources for this kind of work. Perhaps if the process was more decentralised, and more context-specific, solutions could be developed together with those farmers involved in seed production, that are better suited to their own situations.

Jermart Seeds, the first privately-owned black seed company in South Africa

Jermart Seeds, a privately owned seed company, was registered in late 2013 and, until recently, was the only 100% black-owned seed company

in the country. Jermart started by producing drought tolerant maize OPVs (ZM1423 and ZM1523). Both of these are varieties released by the ARC. Since 2015 Jermart has shifted focus to drought-tolerant hybrids. The company acquired two drought-tolerant maize hybrids from CIMMYT in Zimbabwe, namely JEMAT 401 and JEMAT 601Q. They acquired a license from the Water Efficient Maize for Africa (WEMA) project run by the African Agricultural Technology Foundation (AATF) to produce and market the new Drought TEGO maize variety in South Africa. The foundation seed is from the ARC, AATF and CIMMYT. Starting in 2015, Jermart began developing their own foundation seed.

Jermart contracts small-scale farmers to produce seed. Their main objective has been to develop a core of black seed growers who can grow with the company and also produce other types of seeds such as dry beans and grain sorghum.¹⁹ Jermart's biggest market is the government, through its various food security programmes. They are also engaging with major agro-dealers with a view to securing shelf space from them, so that their products can reach even those farmers who fall outside the government's food security initiatives. The main challenges for this company are a lack of funding and the inexperience of small-scale farmers.

Further research into this company could provide insight into the actual costs of entry into the formal seed sector for black farmers. Sean Freeman from Livingseeds has emphasised that "for the small scale/emerging producer the variety list is a massive hurdle that is cumbersome and very costly to use or become a part of".²⁰ Other aspects which can be investigated in more detail include access to germplasm, foundation seed and testing stations, the ability to register new varieties, and empowering versus contracting small-holder seed producers.

18. Interview with Nemera Shargie, Senior Researcher, ARC-Grain Crop Institute, 15 April 2016, Tlokwe/Potchefstroom.

19. Interview with Abel Masekoameng, Director, Jermart Seeds, 17 December 2015, per email.

20. Interview with Sean Freeman, Director, Livingseeds Heirloom Seeds (Pty) Ltd, 11 January 2016.



Conclusion

The South African government has adopted a modernising approach to small-scale agriculture, where the focus of support is on moving disadvantaged and resource-poor agricultural producers from household subsistence production to sustained commercial production. Elsewhere, the ACB has developed a strong critique of this approach to small-scale farmer support. Primarily, it will benefit only a small layer of producers, with negative long-term social and ecological consequences, especially for rural households and communities.

We may imagine that a transformative agenda based on supporting the expansion of black commercial agricultural production would also embrace efforts to support black farmer participation in commercial seed production. However, the current approach by government is to support black producers in the shadow of entrenched large-scale commercial agriculture. On the supply side, large-scale commercial production is understood as the most efficient means to realise the country's food security objectives. On the demand side (consumption), the approach is a combination of subsidies in the form of social grants and fairly weak efforts at supporting income generation projects. The demand/consumption side of food security is seen mainly as the capacity of citizens or inhabitants of the country to purchase the food produced—in ample amounts—by the large-scale corporate agro-food system.

In this context, the seed system is understood already to be sewn up. By this logic, large-scale multinational corporations already produce the essential seed requirements for the country. Accordingly, there is no need for black producers to be involved. If they choose to be involved in any way, they will be accommodated in terms of income-generating activities that provide them with an economically profitable activity, enabling them to buy food and hence realise household food security.

Seed laws, policies, systems, institutions and markets are already entrenched in favour of corporate interests. This means that black

farmers who may be interested in producing seed for formal markets are bound by regulations and rules that are designed to support economies of scale, plant breeders' rights, and capital intensive production systems. Essentially, these factors can be seen as considerable challenges for the entry of small-scale, resource-poor, black farmers into the formal seed system. In addition to the resource and knowledge requirements and strict regulations, there is little public sector support, at any level, to strengthen the capability of small-scale farmers to produce improved and/or certified seed.

There is extensive reference across government policies that could extend to integrate small-scale seed production, as part of indigenous knowledge and biodiversity conservation, economic development, transformation, job creation, and food security goals. However, it is clear that government does not consider small-scale farmer involvement in seed production a priority, as far as its support is concerned. And it may well be that government is correct on this score. In the same way that asking small-scale black farmers to compete with large-scale commercial producers of maize in South Africa, in the current era of corporate economies of scale, would be destined to fail, asking farmers to produce certified hybrid maize seed or other certified mainstream crop seed seems an unlikely strategy for success. A route to success could be to identify niche commercial markets and support farmers to integrate into those; another could be to focus on production, crops and varieties that emphasise local food and seed needs over formal markets.

In 2016 ACB will conduct additional scoping work that scrutinises activities by civil society organisations and government, in support of small-scale black farmers in farmer seed systems operating outside formal systems. These may offer a more viable path for public sector support than trying to integrate farmers into the MNC-dominated commercial sector. Such an approach to public sector support may be further justified on the basis that while 'lost' or marginalised varieties do not have large commercial markets, they may well have relevance and value to farmers in specific localities. There are many benefits, not least enhancing local nutritional diversity and



agricultural biodiversity, even if some projects do not respond directly to income generation. Instead of trying to establish projects for farmers to produce seeds for commercial markets, farmers who are interested could be supported to resuscitate, enhance and maintain crops and varieties for their own and local use.

Lessons can be drawn already from limited activities in South Africa and broader endeavours in the region and the rest of the continent. These include: the importance of participatory methods, with farmers driving the agenda and priorities; the importance of especially local level farmer organisations; integrated multi-disciplinary teams that incorporate technical expertise in the context of public-public partnerships, extension,

social and process facilitation, and cross-cultural learning; and the need for systematic awareness raising about diverse crops and varieties and the nutritional and other benefits of these crops and varieties.

In this light, existing policies and laws will require substantial revision to enable small-scale farmers who want to produce and maintain seed to do so—without fear of criminalisation and without having to meet stringent certification and other requirements that are not appropriate for their needs or conditions. Indeed, explicit policies, programmes and associated budgets for public sector support, to build and extend farmer seed systems and the seed diversity inherent in these systems, will also be required.



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