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SEED AID, SMALLHOLDERS, AND THE DEVELOPMENTAL STATE:

A MIXED METHODS ANALYSIS

OF EMERGENCY RELIEF PROGRAMS IN ETHIOPIA

A Dissertation in

Rural Sociology & International Agriculture and Development

by

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ABSTRACT

In 2015, El Niño induced the worst drought Ethiopia had seen in fifty years. The resulting crop failures left as many as eighteen million people in need of aid, with one-third of the country's woredas classified as facing dire food insecurity. Tens of millions of dollars in foreign aid poured into the country in response. A portion of this aid was given as seed to smallholders. Drawing on quantitative and qualitative data collected with farmers in four regions of Ethiopia in 2016 following the aid distributions, this dissertation analyzes how the Ethiopian state and Ethiopian smallholders respectively utilize seed aid. I suggest these utilization strategies coincide, that they serve different ends, and that, together, they illustrate the complex effects of emergency response.

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ACRONYMS

ADLI	Agriculture Development-Led Industrialization
EPRDF	Ethiopian People's Revolutionary Democratic Front
ESAR	Ethiopia Seed Aid Review
ESE	Ethiopian Seed Enterprise
ESWG	Emergency Seed Working Group
DA	Development Agent (extension worker)
DRM	Disaster Risk Management
DRM-ATF	Disaster Risk Management Agriculture Task Force
GOE	Government of Ethiopia
MNGO	Major Non-Governmental Organization
MOA	Ministry of Agriculture
NDRMC	National Disaster Risk Management Commission
SAG	Strategic Advisory Group

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DEDICATION

I dedicate this dissertation to Ryan Keller (1991-2017), whose passionate devotion to the vulnerable cost him everything. When I see you again, beloved friend, we will get in line for the Zephyr Express.

Chapter 1

Introduction

In 2015, El Niño induced the worst drought Ethiopia had seen in fifty years. The resulting crop failures left as many as eighteen million people in need of aid, with one-third of the country's woredas classified as facing dire food insecurity. "The Government is continuing its efforts to address the full scale of needs; donors and partners must now scale-up to give Ethiopia the humanitarian support and attention it deserves," wrote the commissioner for the country's National Disaster Risk Management Coordination (GOE/JHP, 2015, p. 6).

Scale up they did. In 2016, the UN's Ethiopia Humanitarian Fund made its highest allocation since its founding in 2006, deploying \$74.7M in support of 82 multi-sector projects (OCHA, 2016). In partnership with the UN, USAID's Office of Foreign Disaster Assistance (OFDA) underwrote some \$35M in relief assistance as the USG's response to the crisis. A portion of this funding was earmarked for the replenishment of smallholder seed stocks found to be depleted by the drought (USAID, 2016).

For its part, emergency seed aid is "not a small or specialized practice, but rather is implemented by a wide range of NGOs, governments, and international agencies" (Sperling and McGuire, 2010, p. 196). Given the crisis contexts in which it is utilized, seed aid has a benign aura. It is thought to do no harm (p. 197). This dissertation presents a more complex picture. Drawing on quantitative and qualitative data collected with seed aid beneficiaries during the emergency response implemented by a major NGO in 2016, I show how seed aid embodies and extends the Ethiopian developmental state's pre-eminent, dual-pronged project of economic growth and authoritarian control. Such a political project unfolds as smallholders themselves use seed aid in the recovery of their livelihoods.

Purpose Statement

The purpose of this dissertation is to use mixed methods to analyze the design, practice and political economy of Ethiopian seed aid. A simple, over-arching question frames the study: How is seed aid used? My rationale is that, from the perspective of rural sociology, aid programs cannot be understood as discrete interventions in time and space. They should be analyzed *in situ*, for, as interventions, they are “always part of a chain or flow of events located within the broader framework of the activities of the state and/or international bodies” (Long, 2001, p. 32). As such, they are best understood by analyzing their institutional origins, material and discursive (the design element); their instrumental dynamics among target populations (the practice element); and, finally, the historical-political context in which the programs are situated (the political economy element). I do not primarily aim to assess the efficacy of the aid programs against a set of espoused goals. Rather, I analyze how different actors—principally the state and the beneficiaries themselves—*utilize* seed aid: by what means, to what ends, and within what structures. This approach calls attention to the many effects of aid programs, not just those sought by policymakers (Beck, 2016).

The significance of this study lies in its examination of the function of seed aid programs in nation-building. Research on seed aid, itself a relatively nascent field, has been principally focused on issues of efficacy and appropriateness (e.g., Sperling et al., 2007; Sperling, Cooper, and Remington, 2008). I build on this earlier work by showing how efforts to address farmer seed security in crisis contexts are utilized in the political aspirations of the Ethiopian People’s Revolutionary Democratic Front (EPRDF), the country’s ruling party. This politicization shapes the potential of aid programs to stabilize farmer livelihoods.

Structure and Approach

In the remainder of this chapter, I explain the structure and approach of the dissertation. Chapter 2 is a review of several salient bodies of literature. This chapter positions my study between research on farmer seed security, on the one hand, and on the political economy of rural development in Ethiopia, on the other. The theoretical basis of this liminal niche draws principally on James Scott's (1998) concept of high-modernism, Norman Long's (2001) actor-oriented development sociology, and Thandika Mkandawire's (2001) ideas on the African developmental state. Throughout the dissertation, I attempt to apply an integrated framework of these theories in order to adequately account for the empirical complexity the social world presents to us.

In Chapter 3, I present my research design. Broadly speaking, the dissertation is a mixed methods case study. To build my arguments, I use quantitative survey data collected in Ethiopia in 2016 following the completion of the seed aid programs in question. I also use different forms of qualitative data collected during the survey fieldwork (field notes, participant observation) and after it [institutional documentation, Government of Ethiopia (GOE) speeches]. Later in this chapter, I present a demographic profile of the survey sample, the methods of data collection and analysis utilized, issues of trustworthiness, issues of ethics, and limitations that inhere in the study.

Chapter 4 sets the stage for subsequent empirical chapters by explaining the design, implementation, and evaluation of seed aid programs. Although not guided by a research question, the discussion is important because the procedural aspects of seed aid programs are not well-documented. The programs are administered by, and embedded within, a complex aid bureaucracy, with a range of federal, regional, and sub-regional entities, both governmental and

non-governmental, involved. Moreover, seed aid programs are essentially proprietary, given the often-competitive basis on which implementing organizations compete for donor funding. For instance, requests I made for access to further documentation concerning the seed aid programs (such as funding proposals) were not honored. Bureaucratic and proprietary, the institutional processes of seed aid programs are thus partially opaque, unlike the drought that gave rise to them (widely covered in the media), and subsequently the results to which they gave rise (widely covered by the UN and NGOs). The result is a paucity of scholarly and policy literature on seed aid procedures themselves. Explaining the history and present-day procedures of seed aid programs helps correct for this.

Chapters 5 and 6 are the principal chapters of the study. Chapter 5 addresses the use of seed aid by the smallholder households who received it. Five questions structure the discussion.

Research Question 2.1: How did the use of seed aid differ among households?

Research Question 2.2: How did the overall share of seed sown that was derived from seed aid differ among households?

Research Question 2.3: Was the receipt of seed aid among households associated with changes in sowing quantities?

Research Question 2.4: Was seed aid a source of new varieties?

Research Question 2.5: What open-ended feedback did farmers provide?

My rationale for this set of questions is policy-oriented. I expect seed aid use to reflect the socioeconomic and agroecological diversity of the contexts in which it is distributed. Understanding differences in seed aid use has the potential to produce useful insights for policymakers—for example, to what extent the receipt of seed aid facilitates agricultural recovery. By the same token, analyzing farmers' qualitative appraisals of seed aid programs likewise has the potential to yield helpful insights not captured by structured questions. One such

insight is that the crop/variety profile of seed aid packages needs to be responsive to multiple livelihood needs, such as resilience and productivity. To answer the research questions, I analyze survey data using inferential methods. I also draw on field notes and key informant interviews conducted during the course of the survey fieldwork.

Chapter 6 considers the role of the state in the seed aid programs of 2016. Two questions guide the analysis and discussion.

Research Question 3.1: By what means does the Ethiopian developmental state leverage seed aid programs?

Research Question 3.2: What ends does the Ethiopian state's utilization of aid serve?

More theory-oriented, my rationale in these questions is that the Ethiopian state has an interest in seed aid interventions. When pursued by means of surveillance, conditionality, and selectivity, this interest helps seed aid programs serve a dual end of economic growth and political control. To make this argument, I discuss how seed aid evaluations are monitored, how seed aid distributions have strings attached, and how political patronage appears to influence the beneficiary selection process.

Chapter 7 concludes the dissertation. Here, I summarize the principal findings of my research. I aim to show how my study, building on past research and new evidence, contributes to our understanding of how farmers can recover their livelihoods in an ecologically stressed, politically fraught environment. I also reflect on the relationship between aid and the developmental state, posing several questions to guide further research. Finally, I provide some practical recommendations for emergency seed aid practitioners.

Chapter 2

Literature Review

Overview

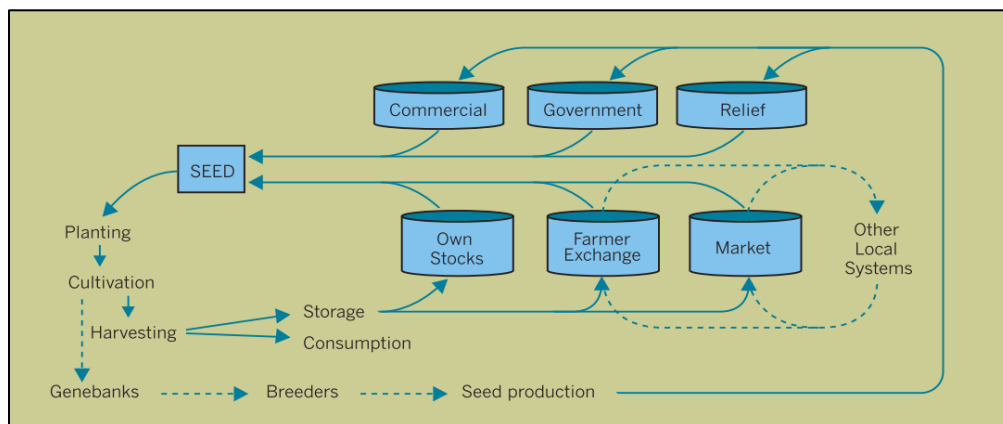
In the previous chapter, I introduced the dissertation. The aim of the study, as I discussed, is to analyze the design, practice, and political economy of Ethiopian seed aid. In the first part of this chapter, I review two bodies of research. The first concerns farmer seed security, and the second concerns the history of aid and rural development in Ethiopia. My dissertation occupies the space between these two literatures. It is this domain to which I aim to contribute. In the latter part of the chapter, I develop the key concepts and theories I use to do so, demonstrating how they enrich our understanding of seed aid.

Farmer Seed Security

Smallholder farmers in the global South typically depend on a variety of sources to meet their needs for planting materials. Heuristically, these sources can be divided into formal and informal seed systems. Informal seed sources include saved seed, seed obtained via exchange with kin or between members of a community, and local grain markets. By contrast, the formal seed system can be understood as “a deliberately constructed [i.e., regulated] system.... which usually starts with plant breeding and selection, resulting in different types of varieties, including hybrids, and promotes materials leading to a formal variety release and maintenance (Understanding Seed Systems,” p. 3, n.d.). Zimmerer’s (2003) conception of seed provisioning is also pluralistic, but scalar in nature. For example, he notes the acquisition of seed is often found to occur at the household-level, intra-communally, but also extra-communally, between communities, in marketplaces, and from NGOs.

Figure 2.1 provides a conceptual illustration of formal and informal seed systems. As the diagram suggests, while the systems are relatively autonomous of one another, they both serve as seed sources for farmers. The diagram also presents a subtle exception to the rule, however. When a modern variety enters a farmer’s planting portfolio, s/he may go on to cross it with a landrace variety, saving it in her own stocks until the next planting season. By contrast, formal system breeders may select pure line landrace varieties that go on to be multiplied and distributed as ‘modern varieties’ (“Understanding Seed Systems,” n.d.). These scenarios illustrate ways formal and informal seed channels may co-mingle. Formally or informally sourced, the way farmers manage their plant genetic resources has important consequences for local agrobiodiversity (Zimmerer, 2010). “Farmers’ management of biological diversity in [local varieties] and landraces exerts either stabilizing selection pressure as reinforcement of genetic cohesiveness or directional pressure and evolutionary innovation, such as purposeful hybridization and generation of new types” (p. 142). In the Ethiopian context, crop variety diversification has also been shown to increase production, illustrating how seed provisioning strategies are tied to livelihood outcomes (Di Falco, Bezabih, and Yesuf, 2010).

Figure 2.1
Conceptualizing Formal and Informal Seed Systems



Source: “Understanding Seed Systems” (n.d.)

Formal and informal seed systems have contrasting strengths and weaknesses. For instance, whereas formal seed systems have a greater number of quality controls and thus circulate seed with greater quality and vigor, varieties circulated through informal seed systems have much wider and ‘deeper’ dissemination (Table 2.1). In a recent study, for example, McGuire and Sperling (2016) found that, within a sample of 9,660 observations from six developing countries (Malawi, Kenya, DRC, Haiti, South Sudan, and Zimbabwe), farmers accessed 90.2% of their seed stock from informal systems. Of that proportion, 50.9% derived from local markets. These figures suggest that while smallholders do source their seed from a plurality of sources, informal channels—especially local grain markets—are of principal importance (see also Sperling and McGuire, 2010b).

Table 2.1 <i>Comparing Formal and Informal Seed Systems</i>		
	<i>Informal</i>	<i>Formal</i>
Farmer participation	Seed selector, purveyor, owner and supplier	Seed receiver
Seed type	Local or farmer varieties	‘Modern’ or improved varieties
Seed quality	Pure, certified, genetically uniform	Less pure, uncertified, genetically diverse
Seed production	Integral to farmers’ grain production	Discrete enterprise (i.e., clear distinction between ‘seed’ and ‘grain’)
Distribution mechanisms	Local gift, exchange, sale, or barter	National agricultural research systems; seed relief programs
Quality control	Local technical knowledge and standards	Physical, physiological and sanitary regulations
Principal strengths	Highly adapted varieties; seed dissemination	Seed vigor
Principal weakness	Lower-yielding varieties, lack of quality control mechanisms	Vulnerable to social disorder, drought, or other natural disaster
Source: Adapted from Aw-Hassan et al., 2008; Biemond et al., 2013; Seboka and Deressa, 1999; Sperling, 2008; Almekinders, 2000; Otieno et al., 2017		

Which channels farmers utilize to access planting material depends in part on the crops they want to grow. For instance, McGuire and Sperling (2016) found that local markets were the principal sources for legumes, accounting for 64.4% of all seed sourced. Own stocks (saved seed) were a particularly important source for vegetatively-propagated crops (e.g., sweet potato cuttings) and dryland cereals (e.g., millet, sorghum), which respectively provided for 47.3% and 40% of all seed accessed for these crops. In the case of cereal seed, this is partly because dry storage conditions make it practical to store cereal seed at home across planting seasons. The only case in the data where agro-dealers supplied the lion's share of seed was cotton (76.4%). To stress the point, "from an array of at least nine possible provision channels, only two presently supply important quantities of seed to smallholder farmers: local markets and farmers' own saved seed (p. 184).

But if farmers obtain their seed from a variety of sources, the ways they access it also varies. McGuire and Sperling (2016) also found farmers accessed approximately 55% of their planting material via cash purchases. Such transactions took place in local markets, with agro-dealers, or through social networks (the authors cite the example of purchasing cassava stems from neighbors while the crop was still in the field). The second most important means of seed access was seed-saving from season to season (30%). Perhaps surprisingly, exchange among kin and neighbors accounted for only 0.8% of all seed accessed, challenging the suggestion of some past research (e.g., Pautasso et al., 2013).

In East Africa, smallholders' attempts to secure the plant genetic resources they need to meet livelihood goals—such as income and/or food—are shaped by law and policy. Seed policy

regimes vary across countries.¹ For example, in Kenya, farmer-to-farmer exchange and sale of seed is prohibited (Mucioki et al., 2018). In Ethiopia, seed policy is largely centered on supporting the formal seed sector, despite the fact that Ethiopian smallholders derive a majority of their seed stock from informal sources. At the same time, however, Ethiopia seed policy as a whole—regardless of whether the formal or informal sector is targeted—has been shown to be more supportive of crop genetic diversity (a critical resource for smallholders in climate change adaptation) than that of Uganda, where the focus is improved varieties that are quality-controlled (Otieno et al., 2017). In Kenya, Tanzania, Uganda, a general trend towards stricter seed system regulation has been noted, as national governments have sought to model their rules and regulations after the International Union for the Protection of New Plant Varieties, which offers strong protections of breeders’ rights, sometimes to the detriment of smallholders’ rights to freely use, sell, and exchange seed (Vernooy, 2017).

When seed systems undergo acute shocks or chronic stress, smallholders experience concomitant shifts in seed security. The FAO sees seed security as the conditions under which “farming households (men and women) [have] access to adequate quantities of quality seeds and plant materials of adapted varieties at all times – good and bad” (FAO, 1998, p. 187). Three things stand out in this definition—seed availability, seed access, and seed quality. Availability implies sufficient quantities of seed are, relatively speaking, nearby (spatial proximity) when they are actually needed (temporal proximity). Access requires that farmers have adequate cash

¹ Vernooy (2017) notes that the adoption of international law (such as the Convention on Biological Diversity and the Nagoya Protocol on Access to Genetic Resources) has also increasingly shaped smallholders’ access to genetic resources.

or other resources (financial credit, loans from kin/neighbors, capital such as livestock) to buy or barter for the seed. Finally, quality means the seed itself is healthy, useable, and genetically acceptable to the farmer in terms of the variety's size, shape, and taste. These schematic dimensions are not mutually exclusive. For instance, availability and access are not always distinguishable in practice: if a farmer has enough money seed can be procured from far away and thus is always 'available' (Sperling, 2008). Also, from a diagnostic standpoint, it may be more helpful to think of seed quality in terms of utilization, i.e., whether seed can meet a user's particular needs (McGuire and Sperling, 2011).

Although, in practice, emergency food aid is often a catalyst for seed aid, food security and seed security are not the same thing (Remington et al., 2002). For instance, farmers may produce enough in a growing season to save seed but lack a sufficient amount to eat. This is especially true of crops with high multiplication rates. In northern Mali, only 3% of the harvest of pearl millet is needed to re-sow the following season, and sorghum in eastern Ethiopia requires only 2-5%. So even in the most extreme cases of crop failures resulting in food insecurity, farmers may still be able to store enough seed to maintain seed security (McGuire and Sperling, 2011). By the same token, households may have enough to eat in a given season but lack the correct type of seed for sowing.

Both acute shocks and chronic stresses constrain seed security (McGuire and Sperling, 2011). Acute shocks encompass "distinct events of short duration that often affect much of the population" (Sperling, 2008, p. 8). Common examples of acute shocks include floods, civil war, and pest infestations. Chronic stress can be economic, ecological, and/or political. Economic stress arises from poverty, where farmers lack land, labor, and capital. Ecological stress is a result of degraded land, repeated drought, or changes in climate due to macro-climatic conditions

(i.e., climate change). Political stress stems from civil strife and uncertain land tenure arrangements. The interactions of acute and chronic stresses are both commonplace and complex. For instance, in the case of Ethiopia, the drought induced by El Niño in 2015 exacerbated the deleterious effects of chronically poor soil quality among smallholders, in a country where a state-owned enterprise controls seed supply, which in turn constrains both availability and access (FAO, 2016).

The most widely-used tool for assessing seed security is the Seed System Security Assessment (Sperling, 2008), published by the International Center for Tropical Agriculture (Table 2.2). The SSSA is a tool for systematically measuring the state of seed security in a region or country following an acute shock (such as famine or war). Importantly, however, the instrument also includes measures to assess chronic issues of seed insecurity. These measures include quantitative and qualitative instruments that gather information from farming households, agro-dealers, traders, and local government and extension officers. In doing so, the SSSA helps practitioners respond to the actual, rather than assumed, need(s) of beneficiary populations (Sperling and McGuire, 2012). This is critical, particularly because “determinations of seed security have nearly always been based, implicitly or explicitly, on food security assessments. Evaluators assess food needs and then just extrapolate seed requirements as part of the aid package” (Sperling, 2008, p. 5). The data produced during an SSSA therefore helps counter supply-side assumptions about what is needed with concrete observations and measurements. These data, furthermore, can be disaggregated (by gender, household size, farm size, etc.) to further inform nuanced livelihood strategies.

<p>Table 2.2 <i>Aims of the Seed System Security Assessment (SSSA)</i></p>
1. Identify zones for assessment and possible intervention
2. Describe the normal status of crop and seed systems
3. Describe the broad effects of the disaster on these farming systems
4. Set goals for relief and recovery operations based on farmers' need
5. Assess the post-crisis functioning of seed channels to determine whether short-term assistance is needed
6. Identify any chronic stresses requiring longer-term solutions and identify emerging development opportunities
7. Determine appropriate short- and longer-term responses based on analysis of priority constraints, opportunities, and farmers' needs
Source: Sperling (2008)

Indeed, SSSAs and seed security programs are often, if not always, part and parcel of broader agricultural livelihood strategies. As a result, such programming typically envisions more than the establishment of “seed security for food security” through “brute production gains” (Sperling and McGuire, 2012, p. 572). Seed security is both an end in itself and a means to other ends. For instance, seed security programs may be linked to the development of agro-enterprises focused on income generation; be connected to nutrition or biofortification programs; or be positioned to help farmers develop climate-smart resilience strategies via diversified crop and/or variety portfolios. In sum, seed security efforts typically do not unfold in programmatic vacuums.

Seed security programming reflects certain biases. For instance, programs often emphasize increased availability of seed quantities via seed production, but neglect seed delivery mechanisms. In a recent review of seed security projects in South Sudan, none of the 20+ organizations multiplying seed had an articulated delivery or marketing component (Sperling and McGuire, 2012). Other projects place the predominant emphasis on high quality seed that

farmers can neither afford nor justify through a cost-benefit analysis. Still other programs emphasize the development of formal agro-dealer networks that tend to favor high-density, less vulnerable farming populations (so excluding more remote, marginal regions). These biases illustrate that what tends to receive the least amount of attention is the ‘access’ dimension of seed security. Projects are “generally characterized by a supply-side focus and a weak notion of who the users are or what they might want or need” (p. 571). Supply-side models also describe much of the history of food aid programming more generally. These approaches are “a carryover from the Malthusian days when acute and widespread food insecurity were understood as caused by food availability deficits (Barrett and Maxwell, 2005, p. 111). Food availability *is* a necessary condition for food security, albeit an insufficient one. This was the major policy insight of Amartya Sen’s work on famines, which we return to later in greater detail.

Emergency seed aid (or seed relief) represents a mainstream approach to seed security programming. It aims at accelerating smallholder agricultural recovery in the wake of a famine, flooding, civil conflict, or other disaster (McGuire and Sperling, 2008). In some countries, such as Ethiopia, Burundi, and Zimbabwe, seed aid has been distributed repeatedly since at least the 1990’s. Indeed, “emergency seed aid is not a small or specialized practice, but rather is implemented by a wide range of NGOs, governments, and international agencies” (McGuire and Sperling, 2010, p. 196). For instance, in 2007 alone, the FAO spent \$93 million on rehabilitation and risk reduction in crop systems, including seed activities. And Sperling et al. (2007) estimates that, in Ethiopia, upwards of \$500M has been invested in emergency seed aid since 1982.

Seed aid takes many forms (Table 2.3). Direct forms of seed aid are the most common approach. These interventions distribute seed directly to beneficiaries. Sperling (2007, p. 12) notes that that each approach to seed aid carries with it a “distinct set of assumptions of what

specific seed security problem might be encountered (availability, access, seed/variety quality).” Indeed, it is often assumptions, rather than empirical inquiry, that both justify and structure the particulars of seed aid programs. For instance, direct forms of seed aid—which typically source seed from outside the agro-ecological region being addressed—arise from the assumption seed is unavailable locally, or that local seed, if it is available, is of inferior quality (Remington et al., 2002). Assessments that test whether this is actually the case are almost never implemented. Thus, seed aid interventions are often misdiagnosed, rarely reflecting on-the-ground realities. But on-the-ground realities, when assessed, can challenge mainstream assumptions (i.e., that seed is suddenly unavailable locally in emergency situations). Empirical work suggests local seed systems tend to be quite resilient under stress (Sperling, Cooper, and Remington, 2008). For example, one such study found that during multiple drought seasons in eastern Kenya and a decade of civil strife coupled with intermittent drought in northern Burundi, seed was generally available in local and regional markets (CRS/Mali and Partners, 2006). In southern Sudan, families displaced by conflict and drought were not found to have eaten their seed stocks, as is generally assumed in contexts where drought destroys food stores (Remington et al., 2002). And during disaster periods in Zimbabwe, Rwanda, Kenya, Somalia, and Afghanistan, local markets have been shown to be far more important for seed supply than emergency seed relief channels (Sperling, Cooper and Remington, 2008).

Market-based approaches to seed aid, by contrast, provide farmers with vouchers or cash so farmers can purchase their own seed locally (Sperling and McGuire, 2010). These interventions work on the assumption seed is locally available but economically inaccessible to farmers. Seed voucher fairs—in which smallholders redeem vouchers for seeds from a variety of vendors—provide beneficiaries with choices between crops, varieties, and qualities (Orindi and

Ochieng, 2005). Voucher fairs are said to have a multiplier effect on the communities where they are implemented, insofar as sales revenues stay in the community due to the vendors (commercial seed companies, stockists, grain traders, and/or small farmers) being local. Still, the assumption seed is available but inaccessible often relies on unverified information, “which is that the target communities have been affected by disaster, that this has resulted in a significant loss of assets; and that donor agencies are responding through the provision of food and non-food assistance” (Remington et al., 2002, p. 326).

Table 2.3

Typology of Current Seed System Interventions

Direct Aid	
1. Direct seed distribution (DSD)	Seed procured from outside agro-ecological region. ¹ Most widely used approach to seed relief.
2. Local procurement and distribution of seed	A variant of DSD, but with seed procured from within agro-ecological region
3. Food aid	'Seed aid protection ration.' Often supplied in emergency situations alongside seed aid so that the farming family need not consume the seed provided.
Market-Based Aid Approaches	
4. Vouchers/cash to farmers	Provide poorer farmers with means to access seed where it is available, from local markets, or the commercial sector. Enables farmers to access crops and varieties of their own choosing.
5. Seed fairs	<i>Ad hoc</i> marketplace to facilitate access to seeds, or specific crops and varieties, from other farmers, traders, and the formal sector
Seed Production and Varietal Development	
6. Seed production	Community-based, local seed production. Farmers trained and/or contracted to produce seed, distinct from their regular production activities, often based on formal seed standards.
7. Provision or development of better varieties	Via small packets, participatory varietal selection, or participatory plant breeding. Important where farmers need access to new genetic material.
¹ Following Sebastian (2014), I define agro-ecological regions (or zones) as “geographical areas exhibiting similar climatic conditions that... are influenced by latitude, elevation, and temperature, as well as seasonality, and rainfall amounts and distribution during the growing season” (p. 34). Chamberlin and Schmidt (2011) draw on previous work to map eleven agroecological zones within Ethiopia according to traditional designations widely used by rural residents.	
Source: Adapted from Sperling et al. (2007)	

A 2004 evaluation of eight seed aid interventions across seven African countries found that a lack of diagnostic assessments led responders to mistake chronic seed security issues for acute seed security issues. In the six cases lacking such diagnoses, greater in-depth analysis “showed the problems to be of a more chronic, systemic nature: e.g., declining productivity, water-related stress, ongoing civil unrest, and/or misplaced political policies” (Sperling,

Remington, and Haugen, 2004, p. 3). The other two cases that did implement prior assessments revealed that the “acute manifestation” of seed system stress was due to “more systemic biotic, abiotic, and economic pressures: build-up of plant disease, lack of crop rotations, declining farm sizes (p. 3).

The paucity of *ex ante* assessments reflects seed aid’s “benign aura,” and perhaps a sense among practitioners that seed aid interventions can “do no harm” and are therefore “neutral at worst.” Seed aid is seen as a “low-risk, safety-first strategy” (Sperling and McGuire, 2010), one that is highly visible and has the “innocent appearance of providing a valuable input that allows farmers to improve their production” (Tripp, 2001, p. 131). But seed aid is not innocuous. In the near-term, seed aid can introduce crops or varieties that are poorly adapted; that contain new pests or diseases; that require long periods to mature when short periods are needed; or that arrive too late for farmers to sow. Indeed, if farmers are led to expect seed aid, they may devote precious time/labor resources to field preparations, instead of seeking seed elsewhere. Subsequently, if the actual seed aid they get is poorly adapted, of poor quality, or of insufficient quantity, the opportunity cost they paid for the expected seed aid may be crippling, producing a scenario that makes them worse off than if they had never received seed aid (Sperling and McGuire, 2010).

In the longer-term, repeated seed aid distributions may create dependencies and market distortions.

As seed is repeatedly distributed season to season, seed aid itself becomes ‘chronic,’ leading to a relief seed system. The result of an “acute” response in a more chronically stressed context means that the problem is not alleviated and that seed system assistance is then needed—again and again. However, the effects of giving “acute” aid in chronic

stress contexts are not just neutral (and may have negative impacts). During the second and third rounds of aid, one is not just starting from the same (compromised) baseline. Increasing evidence, within and beyond these case studies, demonstrates that aid given on a repeated basis distorts farmers' own seed procurement strategies, undermines local seed/grain market functioning, and even compromises the development of more commercial seed supply systems. (Sperling, Remington, and Haugen, 2004, p. 3)

In other words, not implementing assessments prior to seed aid distributions is effective 'policy-making' that shapes seed security and livelihood outcomes for smallholders.

It is possible commercial interests preclude, or at least constrain, the implementation of the systematic assessments that justify the need for seed aid.

There seems to be an unquestioned consensus that certified seed of improved varieties will have a dramatic impact on small farm productivity and profitability, and therefore, there is a need to support the development of a commercial seed sector. Over the past decade, sale of commercial seed to relief agencies for distribution in agriculture recovery programmes has increased dramatically. For example, it is now the leading source of revenue for seed companies in Mozambique. (Remington et al., 2002, p. 317)

By the same token, research institutions have used disasters in order to promote the distribution of their own improved varieties (Friss-Hansen and Rohrbach, 1993, as cited in Remington et al., 2002).

Evaluations of seed aid programs are relatively more abundant than *ex ante* assessments but are still remarkably few given the scale and extent of seed aid programs. One broad critique is that seed aid is subjected to weak governance. Sperling and McGuire (2010) note the apparent lack of oversight by donors or practitioners to ensure the seed aid is effective; the poor

monitoring/evaluation efforts (indicators, if they are used, are usually limited to simplistic outputs such as quantities delivered, or the number of recipients); the absence of concrete objectives; and the exclusion of aid beneficiaries' perspectives from what evaluations do exist. The contrast in scrutiny to other humanitarian aid efforts is striking, owing perhaps to two things. One, seed aid continues to have a low profile despite decades of interventions. "Its common portrayal as an adjunct of food aid hides seed aid from proper monitoring, or even record-keeping, in its own right" (p. 199). Two, seed aid's "benign aura" leads it to be considered widely unproblematic, thereby exempting it from more careful implementation. Strengthened evaluative efforts are unlikely without increased upstream pressure from donors (Sperling, Cooper and Remington, 2008).

When implementing agencies do conduct their own evaluations, confirmation bias is a danger. For example:

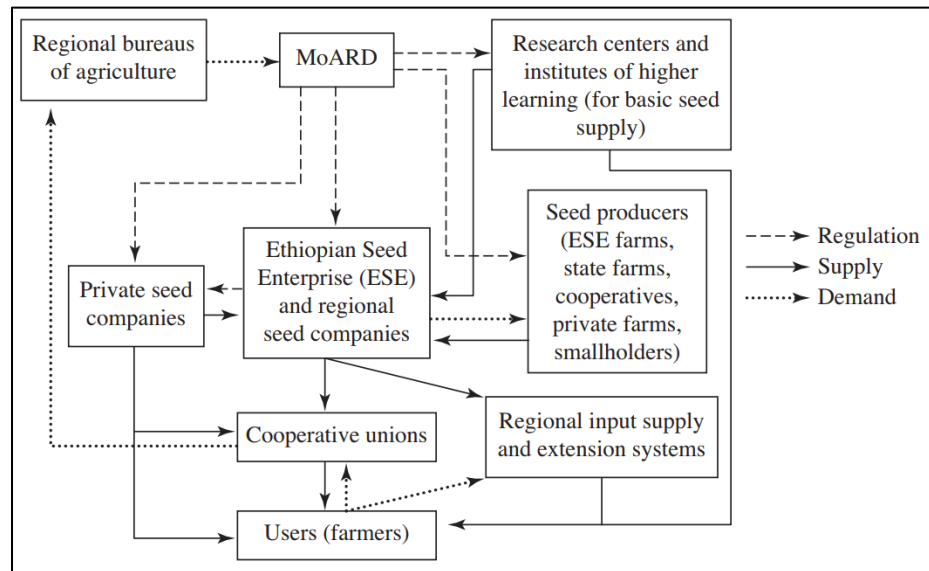
In 1983 and 1987 ACORD evaluated its work and concluded that the seed stores met a felt need and that the programme had reached the targets set. Problems were, however, evident. Drought and harvest failure had led to the depletion of seed stocks. Seed needs were difficult to identify. Selection, treatment, and storage of seed were all either non-existent or rudimentary. Seeds were often distributed unequally according to power and political favour within the villages. (Cromwell and Wiggins, 1993, p. 40)

Another finding in seed aid evaluation is that distributions of seed are not silver bullets. Sperling, Cooper and Remington (2008) synthesize findings from twenty interventions across fifteen countries. They argue that seed aid distributions contributed to seed needs, but insignificantly so: seed aid accounted for approximately 12% of seed sown by beneficiary households post-distribution. "This does not mean that farmers do not value or benefit from the

emergency distribution, but, rather, they also value, very much, the seed they can obtain themselves of known varieties and from known channels” (p. 8).

In the case of Ethiopia, Sperling et al. (2007) interviewed farmers (n = 399) across four different agro-ecologies and thus four different farming systems. On average, farmers recalled having received seed aid three times in their lifetimes. For seasons in which this aid was delivered, it (the seed aid) accounted for an average of 55% of all planted seed. When asked to reflect on longer-term impacts, 20% of farmers indicated that seed aid had supplied them with a new crop, while some 80% indicated it had supplied them with a new variety. Farmers indicated the adoption of these new varieties as the clearest positive impact. However, participants also cited “widespread dependency” (p. 106) as the clearest negative impact, a problem Tripp (2001) has pointed out. To date, Sperling et al.’s (2007) study is the most comprehensive and important on Ethiopian seed aid, but it does not situate aid within a broader political economy of rural development—it does not aim to. As a result, GOE’s involvement in seed aid programs are treated benignly, ostensibly out of necessity, as the MOA itself collaborated with the study team. Another limitation is that the study does not analyze the way seed aid was used by recipients (i.e., whether it was planted, stored, sold/exchanged, etc.). This project builds on the work of Sperling et al. (2007) by speaking to both the political economy of seed aid (Chapter 4 and Chapter 6) and to the way seed aid is used once it is received (Chapter 5).

Figure 2.2
Ethiopia's Formal Seed Sector



Source: Spielman, Mekonnen, and Alemu (2012)

GOE's most explicit participation in emergency seed programs is its provision of seed through a parastatal entity, the Ethiopian Seed Enterprise (ESE). For instance, between July 2003 and July 2004, "Relief Serving Organizations" purchased 12.5% of ESE's total seed stocks. ESE rests at the center of Ethiopia's formal seed sector (Figure 2.2), with responsibilities for producing, processing, packaging, and distributing/selling both basic and certified seed (see both Spielman, Mekonnen, and Alemu, 2012, and Mabaya, 2017,). In the case of the ESAR, ESE supplied a bulk of the seed distributed, although it was often procured through cooperative unions (see Chapter 4). But beyond supplying seed for seed aid programs, this dissertation argues that GOE also uses seed aid programs to its own ends, appropriating emergency efforts to strengthen farmer seed security for the broader project of nation-building. Making this claim requires an understanding of the country's historic aims for rural development. This is the subject of the next section.

Complex Emergencies, Aid, and Rural Development in Ethiopia

Emergencies in Ethiopia are nothing new, and, indeed, the country's aspirations for rural development have been beset by them. In the 20th and 21st centuries alone, de Waal (2018) notes seven distinct famines or food crises: 1958, 1966, 1973, 1984-5, 1999-2000, 2002-3, and, most recently, 2015-16 (the subject of this study). Many, if not all, of the emergencies were 'complex'—ones in which "conflict co-occurs with multiple additional, and often intractable, demographic, environmental, economic, and social instabilities" ("Complex Emergencies," n.d.).² For instance, although the origin of the 1984-5 famine was rainfall failure, de Waal (2018) shows how the military regime of Colonel Mengistu Haile Mariam weaponized famine as a tool of its insurgency, claiming 600,000 lives in the process. (De Waal calls the 1984-5 episode a 'famine crime.')

As elsewhere, complex emergencies in Ethiopia were also rooted in differential abilities to cope with [them]" (Devereux, 1993, p. 42). Sen (1981), for example, showed that the 1973 famine arose from the low purchasing power of starving households, rather than from high food prices or a lack of food availability. At the height of the famine, total food production for the country deviated just 7% from the normal level of production (Endale, 1993). Sen saw this as a failure of the Ethiopian peoples' entitlements to 'command food' through production, trade, and social safety nets or other government programs. Sen's analysis "changed the terms of the debate

² "It is the interaction between people and their natural environment (the way that they respond to, create and shape their 'eco-system') that determines the possible causes and effects of famine" (Bush, 1985, p. 61).

and moved the focus from explanations based on food supply to explanations based on food distribution and the social, political, and legal system on which this was grounded (Edkins, 2008, p. 45).

The preponderance of complex crises has not dissuaded entrenched efforts at nation-building. In the mid-1990s, following a 17-year civil war, the new EPRDF regime established the Agriculture Development-Led Industrialization (ADLI) strategy, which initiated the modernization of smallholder agriculture in order to induce long-term industrial growth (Ketsela, 2006; Berhanu, 2012). “Agriculture should be the starting point for initiating the structural transformation of the economy...and peasant farmers and pastoralists constitute the cornerstone of economic growth,” reasoned the government (Rahmato, 2008, p. 131). Development economists describe structural transformation in four processes: 1) a falling share of agriculture in economic output and employment; 2) a rising share of urban economic activity in industry and services; 3) rural out-migration; and 4) a demographic transition in birth and death rates. In turn, the transformation has consistently been shown to accomplish 1) faster economic growth; 2) equitable distributions of income; 3) a guaranteed nutritional floor for the poor; and 4) stable food prices and quantities (Timmer, 2015). To this end, ADLI—and later, in 2002, the Rural Development Policy and Strategy—would seek to provide smallholders with new technologies and production practices to increase productivity and boost output, so as provide the food, labor and even savings fundamental to the processes of urbanization and industrialization (Rahmato, 2008; Timmer, 2007). The ADLI also formed the basis of the Plan for Accelerated and Sustained Development Programme (PASDEP), implemented between 2005 and 2010 in order to accomplish the majority of the Millennium Development Goals.

To this end, a well-coordinated support system of agricultural extension and agricultural research was taken as a means of enhancing opportunities for improving the performance of the sector with a view to reducing poverty and food insecurity. Other associated goals enshrined in the strategy included commercialization of smallholder agriculture through product diversification and a gradual shift to high-value crops for domestic consumption and export. Interventions that are compatible with the country's varied agro-ecological zones were designed by taking into account the country's comparative advantage in terms of reliable availability of labor, land and agro-ecological diversity. The agricultural extension program, whose key features include deployment of extension workers in all rural grassroots localities (kebeles) and assigning them to undertake various activities like facilitating the imparting of knowledge and skills to smallholder farmers aimed at boosting agricultural production and productivity, was deemed necessary. (Berhanu, 2012, p. 4)

GOE's reaffirmed its commitment to agriculture-led growth in recent years with the publication of two successive strategic plans, the Growth and Transformation Plan I (2010/11 – 2014/15) and II (2014/15 – 2019/20), respectively. These plans also enshrined a special interest in the role of agricultural extension, especially GTP II.

GTP I had given a special emphasis to economic sectors that have significant bearing on sustainable development and structural transformation of the economy.... In GTP I, it was clearly indicated that the agricultural sector would continue to be the main source of economic growth. In turn, within agriculture, the bulk of the growth would originate from smallholder farmers [sic] agriculture.... Efforts have been made to implement strategies to improve productivity of smallholder farmers by disseminating effective technologies

through the scaling up strategy, to conserve natural resources and improve irrigations, and to bring about a shift from subsistence agriculture to production of high value agricultural products. These resulted in an average real agricultural GDP growth rate of 6.6% per annum during the plan implementation period. This growth rate is considered to be high by any measure and enabled the sector to remain a key driver of the national economic growth given the relative weight of agriculture in the overall economy. However, the achievement still fell short by 1.4 percentage points compared to the 8% annual average growth target in GTP I. In terms of structural change, the share of agriculture and allied activities in overall GDP which stood at about 42% at the beginning of the plan (2009/10) declined to nearly 39% by the end of 2014/15.... The decline in the share of agriculture is an indication of structural shift from agriculture to industry and service sectors as has been already noted....

Despite efforts made to commercialize and transform agriculture from subsistence crop production to production of high value crops, performance has been below expectations.... The major factor for the short fall in achieving the planned level of agricultural productivity is related to the coverage and quality of implementation of the agricultural extension system. The coverage and quality of the agricultural extension system was planned to be scaled up via mainly [sic] social learning among community development groups ('agricultural development army'). The target set in the high case growth scenario would have been realized had the scaling up strategy been fully implemented within the framework of well-functioning agriculture development army [sic]. Looking forward, therefore implementation of the full package of the scaling up strategy of the agricultural extension system will be a determining factor in increasing

further production of smallholder farmers and bringing about commercialization and transformation from subsistence farming to high value crop production. (National Planning Commission, 2016, pp. 24-25)

Quoted at length, two aspects of this excerpt from GTP II are noteworthy. First, the specter of a ‘well-functioning’ agricultural development army presages the experiences of the ESAR team, which I discuss in Chapter 6. Second, despite the otherwise benign developmentalist rationality of GTP II, some have pointed out the political value of focusing on smallholders, given the meaningful size of the constituency they represent, and that the fall of both the imperial and military regimes were precipitated by the disaffection of farming peasants (Berhanu, 2012; Rahmato, 2009). As such, state control has advanced under the aegis of rural development, to an end of quelling antiregime mobilization (Brechenmacher, 2017) and so “evoking compliance from the countryside” (Bates, 2014, p. 106).

Interestingly, at the same time, humanitarian aid in Ethiopia has expanded (Flores, 2013; McVety, 2012). Indeed, the country is one of the largest beneficiaries of overseas development assistance (ODA) worldwide. “Over the last ten years,” note Fantini and Puddu (2016), “international ODA to Ethiopia in absolute [terms] has constantly grown” (p. 95). Such is the scale of ODA to Ethiopia that it is estimated to have represented 50 to 60 percent of the national budget in recent years. As such, “development aid has become essential in funding the Ethiopian government’s so-called development strategy, outlined in the 2010 Growth and Transformation Plan [GTP I]” (Flores, 2013, p. 1). As the World Bank warned, such a strategy has at times resulted in GOE using its “donor-funded structures and services to control and oppress the population; severely impinge upon their rights to freedom of expression, association, and assembly; and discriminate against its citizens based on political affiliation” (p. 17).

Consequently, the EPRDF has attracted the ire of the human rights community, who unequivocally referred to their use of aid as “development without freedom.”

Led by the ruling Ethiopian People’s Revolutionary Democratic Front (EPRDF), the government has used donor-supported programs, salaries, and training opportunities as political weapons to control the population, punish dissent, and undermine political opponents—both real and perceived. Local officials deny these people access to seeds and fertilizer, agricultural land, credit, food aid, and other resources for development. Such politicization has a direct impact on the livelihoods of people for whom access to agricultural inputs is a matter of survival. It also contributes to a broader climate of fear, sending a potent message that basic survival depends on political loyalty to the state and the ruling party. (Rawlence, 2010, p. 4)

A principal aim of this study is to demonstrate how efforts to strengthen farmer seed security—even in the face of emergencies, as is the case here—are likewise subjected to political capture. Despite the life-or-death scenarios these seed aid programs are designed to mitigate, the interventions are nonetheless conformed by the state to its requirements for development, growth, and control. In this sense, programs addressing farmer seed security in Ethiopia are not simply a procedural matter, but a contested set of political events. In the following section, I discuss the theories and concepts I use to make this argument.

Towards a Theory of Seed Aid

In the case of Ethiopia, emergency seed aid programs can be seen as planned interventions conformed to the requirements of the developmental state according to the broader vision of an ‘authoritarian high-modernism’ (Long, 2001; Scott, 1998; Mkandawire, 2001). It is helpful to see these three concepts as nested concentrically. Planned seed aid interventions lie at

the center. They embody, among other things, the politics of the developmental state, which in turn is encompassed by a broad belief in progress and the state's role in realizing it. In this section, I discuss these three integrated components,

In his account of some of the failures of 'some of the great utopian social engineering schemes of the twentieth century,' Scott (1998) emphasized the role of the state's 'high-modernist' ideology.

It is best conceived as a strong, one might even say muscle-bound, version of the self-confidence about scientific and technical progress, the expansion of production, the growing satisfaction of human needs, the mastery of nature (including human nature), and, above all, the rational design of social order commensurate with the scientific understanding of natural laws. (Scott, 1998, p. 4)

Where agriculture and rural development was concerned, high-modernism achieved hegemony especially in the West in the decades from 1945 to 1975. This regime committed itself to:

...the superior technical efficiency of large-scale farms, the importance of mechanization to save labor and break technical bottlenecks, the superiority of monocropping and hybrids over polycropping and landraces, and the advantages of high-input agriculture, including commercial fertilizers and pesticides. (p. 271)

Despite its Western origins, such a belief system describes the projects of Soviet collectivization and, subsequently, China's Great Leap Forward (Li and Yang, 2005). In both cases, the "unspoken logic...was one of consolidating the power of central institutions and diminishing the autonomy of cultivators and their communities vis-à-vis those institutions" (Scott, 1998, p. 286). In other words, it was not only a high-modernist ideology, but also "an authoritarian state that [was] willing and *able* to use the full weight of its coercive power to bring these high-modernist

designs into being” (p. 5, emphasis mine).³ As both an ideology and a set of capabilities, Scott’s notion of authoritarian high-modernism maps closely onto Mkandawire’s (2001) conception of the developmental state, which entails an ‘ideology’ (where the mission is economic development) and a ‘structure’ (the autonomous capacity to realize it).

Both concepts (authoritarian high-modernism and the developmental state) imply a normative trajectory. For the Ethiopian state, the means and ends of this pathway are distinctly Chinese. As one senior Ethiopian bureaucrat put it plainly, “We are twenty years behind China, and we’re trying to do what they did to get where they are” (Fourie, 2015, p. 299). The Chinese model of development—the ‘Beijing consensus’—is traceable to the thought of former Ethiopian Prime Minister Meles Zenawi, who governed the country from 1995 until his death in 2012. In his unfinished 2004 master’s thesis, Meles outlined his ideas for autochthonous development driven by government intervention, especially in the rural sector (Schaefer, 2011). Meles was

³ The ‘tragic episodes’ of state-initiated social engineering Scott presents originated not only in authoritarianism and a high-modernist ideology. Two further conditions were necessary. One was the administrative capacity of the state to order nature and society according to the requirements of high-modernism. The other was “a prostrate civil society that lacks the capacity to resist these plans” (p. 5). These latter two conditions arguably describe the Ethiopian context, as well. However, by suggesting Ethiopia meets all four conditions, I do not intend to prognosticate another tragic episode. Instead, I aim to describe how emergency seed aid programs function in Ethiopia’s nation-building efforts.

also known for consistently praising the Chinese Communist Party’s economic stewardship and marking the limits of the free market (Kaplan, 2018).⁴

[Meles] rejected out of hand the ‘Washington consensus’ model of development as a ‘dead end,’ arguing that this simply bound developing countries into relations of subservience to already developed states, and that a strong state geared to a purposive development agenda was required in order to break the stranglehold of dependence.

(Clapham, 2018, p. 1154)

In the Chinese paradigm, small farmers and rural areas were of critical importance. The Chinese state sought to maximize output of (or extract surplus from) smallholders by controlling input distribution systems (including fertilizer), expanding the extension system, and investing in better infrastructure. “Only *after* the agricultural sector strengthened did Chinese officials introduce more widespread market liberalization reforms in the 1990s and 2000s,” notes Kaplan (2018, p. 2, emphasis in original).

Understanding Ethiopia’s deference to the Chinese experience puts their Growth and Transformation Plans I and II in context. The plans can be seen as artefacts of the developmental state—with Chinese characteristics. Laying the burden of economic growth at the feet of the

⁴ Beyond the example they provide for Ethiopia’s ambitions, several have noted the ways China is a partner in them, as well—for example, by training Ethiopian agricultural officials and providing much of the country’s foreign direct investment (Tugendhat and Alemu, 2016; Crabtree, 2018; Alemu and Scoones, 2013). As we have already noted, however, Ethiopia accepts substantial foreign aid from Western donors. Such is the shrewd calculus of Ethiopian statecraft.

country's smallholders is, for instance, a strategy that seems to derive directly from China's example.

Such, then, is the context in which seed aid programs unfold. To analyze seed aid programs themselves, I draw on Long's (2001) idea of planned intervention, which is at the center of his actor-oriented development sociology.

An-actor oriented approach begins with the simple idea that different social forms develop under the same or similar structural circumstances....A main task for analysis, then, is to identify and characterize differing actors' practices, strategies and rationales, the conditions under which they arise, how they interlock, their viability and effectiveness for solving specific problems, and their wider social ramifications. (2001, p. 20)

The principal actors of the seed aid programs analyzed here are the recipients of seed aid (Ethiopian smallholders), a major NGO (MNGO), its partners, and various GOE entities. Using Long's terminology, I refer to the seed aid programs themselves as the planned interventions in and through which these actors relate. The concept of planned intervention is central, both for Long and for this dissertation. Long defines planned intervention as "an ongoing, socially constructed and negotiated process, not simply the execution of an already-specified plan of action with expected outcomes" (p. 31). The equal emphasis on what intervention is and is not is fitting, for Long wants the concept to be useful primarily in problematizing and "demythologizing" traditional understandings of the term. Planned intervention, in Long's usage, needs recognizing "for what it is," as opposed to seeing it as:

essentially linear in nature, implying some kind of step-by-step progression from policy formulation to implementation to outcomes, after which one could make an *ex post facto* evaluation to establish how far the original objectives had been achieved. (p. 31)

It follows, then, that the first principal element of planned interventions is that they are not discrete in time or space. Indeed, rather than exhibiting sharp spatial or temporal boundaries, interventions are “always part of a chain or flow of events located within the broader framework of the activities of the state and/or international bodies” (p. 32). Moreover, interventions are linked discursively and psychologically, among other ways, to previous interventions. Stakeholders remember past interventions. The findings, outcomes, and memories they associate with past projects mediate their interactions with ones in the present. Suggesting interventions should be analyzed *in situ* is a vital contribution, given the ubiquity of project mentalities in development research and practice today (Tripp, 2001). The insight helps us expand the scope of inquiry into interventions beyond their arbitrary boundaries.

Second, in a similar way, because planned interventions generally assume external inputs are necessary, indispensable elements of success, they are normatively assertive. “This is illustrated graphically by the idea of ‘miracle’ seeds, ‘improved’ varieties, ‘the message of extension,’ and ‘the benefits of privileged receivers,’” Long notes (pp. 33-34). “The situation chosen for intervention is deemed inadequate or needing change; thus local bodies of knowledge, organizational forms and resources are implicitly...de-legitimized” (pp. 34-35). Interventions are thus not simply the replacement of inferior local assets with external superior assets, but ultimately “a ‘trade in images’ which seeks to redefine the nature of state-civic society relations through the promotion of certain normative standards of what development is and should entail” (p. 35). The idea that development interventions are normative is an important point, even if

much earlier iterations of the observation exist (Escobar, 1995). Development praxis today is just as normative as it was in 2001, when Long published his book. The difference is a greater reflexivity that places more value on local knowledge, local solutions, and participation. My experience with the ESAR bears this out, as I discuss in Chapters 4 and 6.

A third key element of planned intervention asserts the primacy of the state's ambitions in emergency projects.

...behind the claim that intervention is the trigger or driving force of development is the fact that intervention practices more often than not aim to control the pattern of local economic and political development. Policy interventions seek to bring the dynamic of local initiative into line with the interests and perspectives of public authorities, and to reproduce the image of the state (or its agencies) as being the key to development. This intent to increase outside control may affect the effectiveness of, and the meanings accorded to, local development activities. (Long, 2001, p. 38)

This is something of an extension of the first element, and it is equally crucial, for it helps us see seed aid interventions as effective political projects of the EPRDF, which are subjected to the same kind of state discipline as that of more routine development projects (Flores, 2013; Rawlence, 2010). The consequences of the politicization of these interventions demonstrate how interventions have many effects, only some of which are intended (Beck, 2016; Cochrane and Tamiru, 2016).

Long's suggestion is that interventions fit into broader state strategies that transcend the immediate crises which give rise to such interventions. The way the Ethiopian state speaks publicly about disasters is indicative of this dynamic. For instance, in 2014, Ethiopia's Minister

of Agriculture addressed the United Nations Disaster Risk Reduction's First Preparatory Committee Meeting.

As you all know, Ethiopia is one of the world's fastest growing economies. However, natural and human induced disasters continue posing a serious threat to our country mainly because of widespread vulnerability and climate change. This phenomenon leads to a higher risk of losing hard won development gains and growing food insecurity as well as hindering progress towards eradicating of poverty [sic] and attaining sustainable economic development. *Recognizing this situation, the Government of Ethiopia has put disaster risk reduction and resilience building at the top of its development agenda.*

(Kassa, 2014, p. 1, emphasis mine)

Three years later, the same individual, by then the commissioner of the National Disaster Risk Management Commission, made the following remarks in Cancun at the Fifth Global Platform for Disaster Risk Reduction.

Ethiopia has taken and will continue to take a number of concrete steps towards advancing the disaster risk reduction and management agenda in the country in the context of our National Disaster Risk Management Policies and Strategies as well as global, regional, and sub-regional disaster risk reduction/management frameworks and plans. *This is a clear testament to the fact that disaster risk management is top on Ethiopia's development agenda.* It wasn't only that the government took a decisive measure to move away from disaster management to disaster risk management in terms of thinking and approach, but also implemented a number of interventions to translate the new thinking and approach into action. These include: undertaking risk assessment and profiling, strengthening the early warning and response system, and putting in place

institutional, policy and legal frameworks for disaster risk reduction and management, besides implementing targeted programs to build the resilience of vulnerable people, community, and their assets. (Kassa, 2017, p. 3, emphasis mine)

In other words, disaster management is within the purview of the Ethiopian developmental state. Long allows us to see how disaster management interventions (seed aid programs) are shaped by the state's broader political and economic ambitions, which, in turn, emanate from an ideology of authoritarian high-modernism.

Within this context, smallholders have agency, embodied in their diverse uses of seed aid. I approach the concept of agency from a livelihoods perspective.

['Livelihoods'] expresses the idea of individuals and groups striving to make a living, attempting to meet their various consumption and economic necessities, coping with uncertainties, responding to new opportunities, and choosing between different value positions. (Long, 2001, p. 54)

Smallholders use seed aid opportunistically in the recovery of their livelihoods. The way they choose to use it is shaped by agroecological context and by their understanding of future opportunities (or lack thereof). For instance, as we saw in the ESAR, if a farmer expects rainfall deficits in the coming cropping season, or if the price of teff, for example, is understood to be declining in her market, she may divert seed aid to consumption or storage. These utilization decisions co-occur with those of the state. Understanding the processes associated with both groups—smallholders and the state—is the broad aim of my study.

Chapter Summary

This chapter sets the dissertation in the context of two broad bodies of literature. The first is farmer seed security, and the second is the history of aid and rural development in Ethiopia. I

situate the dissertation between these two areas of research, merging Scott's (1998) concept of high-modernism, Mkandawire's (2001) concept of African developmental states, and Long's (2001) concept of planned interventions. So integrated, the concepts provide an interpretive framework for assessing the respective ways smallholders and the state use seed aid.

Chapter 3

Research Design

Overview

In this chapter, I present the research design for this dissertation, the broad purpose of which is to use a mixed methods case study to analyze the design, practice and political economy of Ethiopian seed aid. The organization of the chapter is as follows. First, I discuss the study's background and setting. Next, I present my methodology, including my research paradigm, site selection and sampling approaches, data collection and analysis procedures, issues of trustworthiness and ethics (respectively), and limitations to the study. I conclude the chapter by depicting the organizing framework for the dissertation.

Background and Setting

In 2015, Ethiopia's two main rainy seasons failed, initiating one of the worst droughts there in decades. Induced by El Niño, the droughts were estimated to have affected the food security of some ten million people. At the beginning of 2016, the outlook was grim.

The effects of El Niño threaten the livelihoods of pastoralists, agropastoralists and smallholder farmers and the food security of millions of Ethiopians. Continued drought through the lean season will contribute to decreasing availability of and access to food – especially as prices rise, food stores deplete and livestock body conditions worsen. Means of production for the next agricultural season are extremely limited as seed reserves have been exhausted and remaining livestock sold. The expected flooding caused by El Niño in southern areas of the country further threatens crop production capacity and livestock health. Increased animal disease outbreaks, including zoonoses and food-borne diseases, pose huge economic and public health risks. Damage to already weak infrastructure by

floodwaters has the potential to severely reduce critical water access for farmers and pastoralists. (FAO, 2016, p. 3)

In response, GOE, in concert with FAO, coordinated a large-scale emergency response (see Chapter 4). A component of this response were the distributions of seed aid across the affected regions of Ethiopia, one in advance of the 2016 Belg cropping season, and the other in advance of the 2016 Meher 2016 cropping season. Various consortia of humanitarian organizations implemented these seed distributions, including one I refer to as the major NGO (MNGO). For the 2016 Belg distributions, which began December 1, 2015, the MNGO led a 7-member consortium in the distribution of 17,030 quintals (1,703,000 kilograms) to 111,426 households distributed across 34 woredas in four regions (SNNPR, Oromia, Tigray, and Amhara). For the 2016 Meher distributions, which began April 1, 2016, the MNGO led a 9-member consortium in the distribution of 52, 337 quintals (5,233,700 kilograms) to 251,201 households distributed across 51 woredas in the same regions (see Figure 3.2).⁵

The MNGO commissioned a review of these two seed aid programs, which was referred to as the Ethiopia Seed Aid Review (ESAR). Leading the ESAR was a senior researcher employed by the MNGO. The researcher has expertise in agricultural livelihoods and seed systems. This researcher hired me as an independent contractor to assist in the study's design,

⁵ The principal donor for the Belg distributions was the UN's Office for the Coordination of Humanitarian Affairs (OCHA), whereas for the Meher distributions it was USAID's Office of Foreign Disaster Assistance (OFDA).

implementation, analysis, and reporting.⁶ Together, we drafted the protocols for the study's various instruments between July and September 2016. During the implementation period, which took place in October – November 2016 (approximately 4.5 weeks), the researcher and I coordinated and managed data collection at each of the four study sites, with the help of a team of enumerators.

Inclusive of highlands and lowlands, and of arid, semiarid and subtropical climates, the implementation regions represent a cross-section of the country's (and the ESAR's) agroecological diversity (Hurni, 1998; "Ethiopia", N.D.; Deressa et al., 2010; Figure 3.1). Such diversity is also expressed subregionally, as illustrated in brief agroecological profiles, which I sketch here.

Figure 3.1
Agroecological Diversity in the ESAR



Oromia lowlands

SNNPR highlands

⁶ Full disclosure: I charged a consulting fee for assisting in the design of the study's instruments and logistical workplan. However, for the 4.5 weeks we were in the field conducting the ESAR in October-November 2016, I did not receive compensation. Formally, I served as a technical advisor for the ESAR. It was also understood that I was there as a graduate student.

In Humbo and Bolose Sore, the two SNNPR study woredas, the former has two growing seasons, relatively spacious landholdings, and primary crops of maize, Haricot beans, teff and chickpea. By contrast, the latter, Boloso Sore, is set in the highlands, farmers are limited to one growing season, landholdings are small, and the principal crops are limited to teff and Haricot bean. In Oromia, both study woredas, Sire and Dodota, were set in the Arussi zone of the Rift Valley. These were lowland to intermediate altitude woredas, with only one growing season (Meher). By a factor of seven, wheat was the most significant seed aid crop distributed here, followed by teff, with typical pack sizes of 75kg and 12.5 kg, respectively. Despite its current importance for food and income, wheat may be declining in importance due to widespread yield losses stemming from wheat rust, severe drought, and a shorter Meher. Teff and barley, which are also important staple crops for food and income, cope better with variations in weather, according to a group of farmers in Dodota woreda.

The Tigray study woredas were a mixture of diversified lowland, midland and highland agroecologies. The sample woredas were Raya Azebo and Alamata in South Tigray Zone. High temperatures and erratic rainfalls characterize the region, which is generally subtropical and has an extended dry period of 9 to 10 months. As a result, the vast majority of the region is considered semiarid. Teff dominates the region as the staple crop. Sorghum, wheat, maize, barley, field pea, barley and faba bean are also important. In Amhara, the study sites were located in South Wollo Zone, in Tehuledere and Dessie Zuria woredas. These are dominated by cereal production, predominantly barley, teff and wheat, with sorghum at lower elevations. Pulses such as lentil, chickpea and field pea are also important crops for food and income. The region has both Meher and Belg cropping seasons, although in recent years Belg rains have been

poor in some areas, forcing smallholders to wait until the Meher to plant. Most of the region is on the highland plateau and is characterized by mountains, hills, valleys, and gorges.

In sum, the implementation regions where seed aid was distributed represent significant agroecological diversity. Some of this diversity is reflected in the varying demographic profiles of the ESAR sample across the study regions. I discuss this later in the chapter. Presently, I explain the methodology of the study.

Methodology

Paradigm. Like most, I believe our assumptions about the nature of being and knowledge shape our approach to research. My own assumptions syncretize elements of the pragmatic, postpositivist, and emancipatory traditions. Here, I outline three principal commitments. First, I maintain a critical, applied pragmatism towards research problems. Although debates central to the philosophy of social science (i.e., positivism vs. constructivism, quantitative vs. qualitative, subject vs. object) are important, they are also unresolved. As such, my bias is for useful, rather than inscrutable, research (Creswell, 2009). More importantly, I think researchers should do work that comes naturally to them, within reason, and my proclivity is practice-oriented research. Others excel at theory-oriented research, still others at some hybrid. I like this plurality of orientations. It provides checks and balances, prompts creative destruction (so to speak), and makes room for subaltern rationalities (Louai, 2012). As far as this project is concerned, my applied/critical orientation prompts me to analyze to what extent seed aid programs influence farmer livelihoods, on the one hand, and to what extent they embody state coercion, on the other.

Second, as a pragmatist, I privilege research problems rather than research methods, to use Creswell's (2009) distinction, marshalling all available approaches to understanding the issue at hand. In the case of this dissertation, this results in a mixed methods paradigm (Johnson and

Onwuegbuzie, 2004; see below). Third, as for research problems themselves, I ground them in the structure/agency problematic. I judge the social as arising iteratively (or dialectically) from themes prescribed by structures (or schemas), on the one hand, and by the unregulated variations on those themes interpreted by actors, on the other (Sewell, 1992). The notion of musical improvisation is apt here. It is the musician's knowledge of music generally that forms the basis of her capacity to interpret a song in specific contexts and specific ways. In terms of seed aid, Long's (2001) concept of planned interventions describes the schematic, or structural, contexts in which actors such as NGOs, farmers, and the state deploy a variety of improvised interpretations and responses.

While not exhaustive, this discussion encompasses the central elements of the philosophical and theoretical basis from which my research design arises. The design is a mixed methods case study. A central element of the study is the ESAR. The ESAR was itself a mixed methods study that utilized household questionnaires (quantitative) and community meetings (qualitative). The particular mixed method design can be referred to as "fully mixed," in which the quantitative and qualitative components of the research received "concurrent equal status." In this design, quantitative and qualitative data are collected at the same time, and both quantitative and qualitative data are given approximately equal weight (Leech and Onwuegbuzie, 2009). The design was fully mixed in the sense that quantitative and qualitative findings were not simply synthesized after each had been collected and analyzed. Rather, findings from one type of method gave rise to questions pursued in the other type. For instance, when household questionnaires identified conditions that were attached to accessing seed aid—such as purchasing fertilizer—the research team followed up on this issue in community meetings. Likewise, when issues of corruption arose in community meetings, enumerators probed this issue during

household questionnaires. Such cross-method themes (conditionality, corruption) became important discussion points in the ESAR report (McGuire, Sperling, and Man, 2016; see Chapter 6).

This dissertation situates an analysis of the ESAR data set (Chapter 5) within two other chapters, one of which focuses on the institutional processes associated with seed aid (Chapter 4), and another which focuses on the state's relationship to seed aid (Chapter 6). Since, for aspects of these chapters, the boundaries between phenomenon and context are not clearly evident, and since these chapters ask explanatory questions about a contemporary set of events over which I have no control, I approach the dissertation overall as a case study, despite its grounding in a survey (Yin, 2003).

Site selection and sampling. Figure 3.2 depicts the regions and woredas in which seed aid was distributed for the 2016 Meher cropping season, as well as the woredas that were included in the ESAR. (All regions, but not all woredas, included in the seed distributions were included in the ESAR.) As the commissioner of the ESAR, the MNGO selected the study woredas on the basis of three criteria. First, the woredas selected were to be logistically feasible, meaning they were accessible to the ESAR team by car, were relatively politically stable, and were located where regional partners of the MNGO could provide assistance in the fieldwork. Second, the woredas were to be agroecologically representative of the region. The differences between the two SNNPR study woredas (discussed earlier) exemplify this principle. Finally, where possible, woredas were to have received the seed aid distributions for both the Belg and Meher seasons. At the subworeda level, kebeles (villages) were chosen at random for surveying. Where possible, two kebeles were sampled (Table 3.1), although time and resource constraints only allowed for the sampling of one kebele in some cases. Within kebeles, households were

selected purposively. Enumerators visited every other household, asking the apparent household head whether the family had received seed aid at least once that year. If so, the individual was consented and surveyed. If not, the enumerators moved to the next visible household, stopping at each one until finding a household that had received seed aid and that consented to being interviewed. Key informant interviews, community meetings were implemented in the woredas surveyed. Key informant interviews were opportunistic in that the ESAR team sought to interview as many woreda- and kebele-level government representatives and agricultural extension officers as possible (see next section).

Figure 3.2

Woredas that Received Seed Aid and Those Among Them that were Included in the ESAR Sample

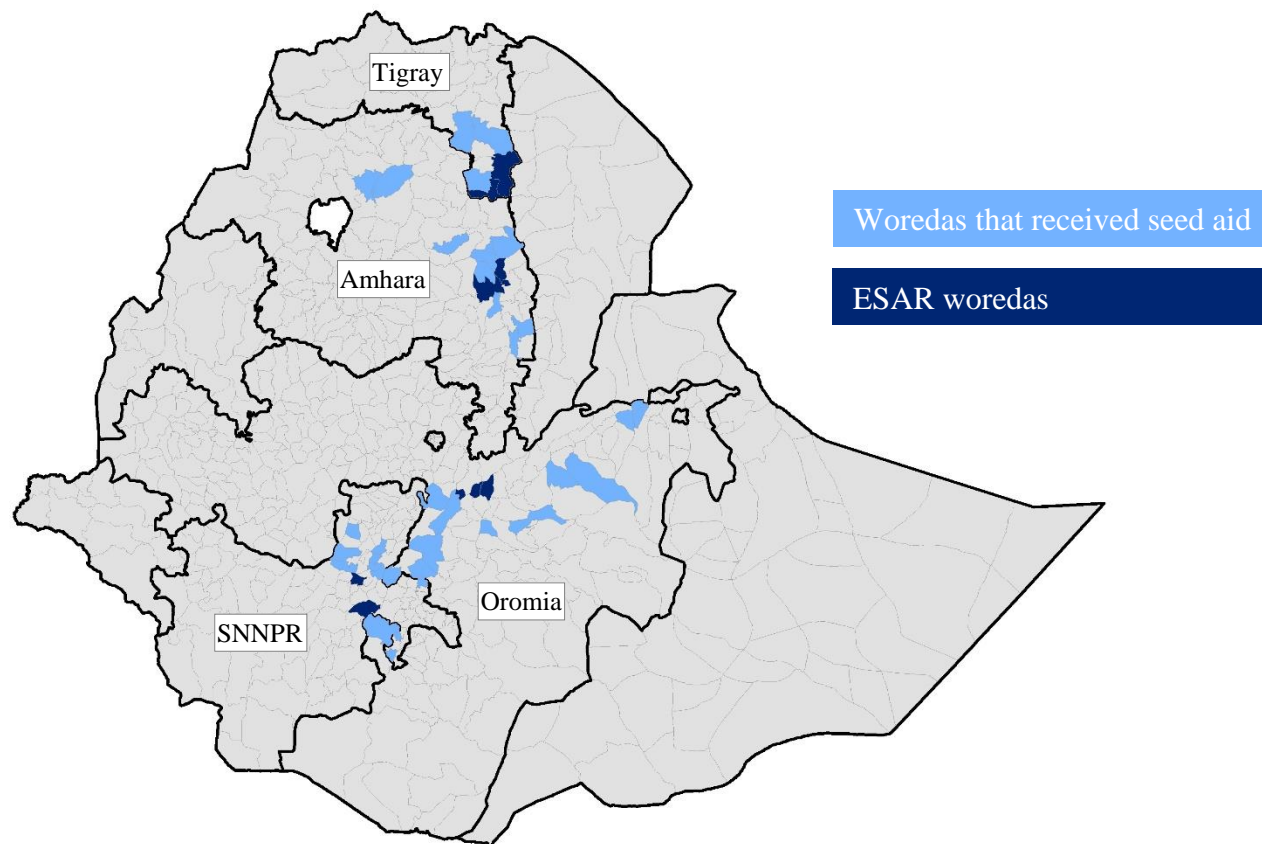


Table 3.1
Kebeles Sampled by Woreda

SNNPR	# Kebeles Sampled
<i>Humbo</i>	2
<i>Boloso Sore</i>	2
Oromia	
<i>Dodota</i>	2
<i>Sire</i>	2
Tigray	
<i>Raya Azebo</i>	2
<i>Raya Alamata</i>	1
Amhara	
<i>Tehuledere</i>	2
<i>Dessie Zuria</i>	1

Sample profile. The ESAR team surveyed a total of 403 households across four regions—SNNPR, Oromia, Tigray, and Amhara (Table 3.2). Overall, four-fifths of the households interviewed were headed by males. The median age of respondents was 42, and the median household size was six people. In all but 7% of cases, adults headed the households interviewed. The area of land cultivated by participating households varied. The most common land size cultivated was 0.5-1.0 hectares; 45% of respondents fell within this category. The proportion of participants who were cultivating two hectares or less was 84%. A minority of households (15%) were cultivating land areas greater than two hectares.⁷ In terms of seed aid,

⁷ “Land area cultivated” differs from “farm size.” The former intends to size the amount of land actually under production—i.e., not just accessible land but land-in-use. For different reasons, farmers may over- or under-report the amount of land they own or have entitlements or access to, whereas the land areas they actually cultivate are often observable and thus more

farmers reported having received it an average of two times in the last five years, and the vast majority was delivered via direct seed distribution (Table 3.3).

Table 3.2
Demographic Summary of ESAR Sample

	Total	SNNPR	Oromia	Tigray	Amhara
Households interviewed	403	109	96	98	100
Household structure					
Male head	81%	78%	80%	72%	94%
Female head	19%	22%	20%	28%	6%
Median age of household head	42	40	38	46	45
Median size of household	6	6	5	6	5
Household type					
Adult head	93%	96%	90%	96%	80%
Child head	2%	0%	3%	3%	2%
Elder head	5%	4%	7%	1%	8%
Average land area cultivated					
<0.5 ha	19%	19%	9%	24%	24%
0.5 - 1.0 ha	45%	39%	23%	57%	61%
>1.0-2.0 ha	20%	16%	34%	17%	14%
2.0 ha	15%	26%	33%	1%	1%

Table 3.3
Frequency and Types of Seed Aid

# Times Seed Aid Received in Last 5 Years	Total		SNNPR		Oromia		Tigray		Amhara	
	N	%	N	%	N	%	N	%	N	%
N	402		108		96		98		100	
Average	1.87		2.50		1.40		2.00		1.50	
Max	10		10		4		6		8	
Types of Seed Aid Received	N	%	N	%	N	%	N	%	N	%
Direct Seed Distribution	401	95%	109	94%	95	86%	98	99%	99	98%
Seed Vouchers	12	3%	1	1%	10	9%	0	0%	1	1%
Revolving Seed Loans	6	1%	4	3%	2	2%	0	0%	0	0%
Cash	3	1%	1	1%	2	2%	0	0%	0	0%
Other	1	0%	1	1%	1	1%	1	1%	1	1%
Total	423	100%	116	100%	110	100%	99	100%	101	100%

difficult to exaggerate. As a result, “land area cultivated” provides a more valid and reliable proxy for socio-economic status.

Data collection methods. The ESAR was a mixed methods study that utilized household questionnaires (primarily quantitative), community meetings (primarily qualitative), and key informant interviews (primarily qualitative). The household questionnaire initially encompassed five sections and took around 45 minutes to implement (Appendix A). During the first week of fieldwork in SNNPR, however, emergent issues around the conditionality of seed aid prompted us to add a sixth section (Appendix B). The community meeting typically lasted about 90 minutes (Appendix C). These meetings were held outdoors in common gathering areas, and were open to all within the kebele by word-of-mouth invitation. Key informant interviews were not structured with an instrument, since the meetings were ad hoc and the questions depended on the office held by the interviewee. As such, the questions asked to interviewees were exploratory, and were entered into our field notes, rather than a systematic database.

During the fieldwork, we were assisted by Ethiopian nationals who served as our data enumerators and data entry clerks. The data enumerators were recruited by the MNGO in each of the four study sites. They were responsible for implementing a household questionnaire (a survey) in various villages across the study site, and for providing translation during key informant interviews and community meetings. (The interviews and meetings were partially, but not exhaustively, transcribed.) As locals to the given study site, they were knowledgeable of the area's geography, climate, and local dialects. Many of the enumerators had a background in agricultural research. Others had experience in public health research. Few were inexperienced in field research altogether. The data clerks primarily were responsible for entering the questionnaire (survey) data into Microsoft Excel. They traveled with the lead researcher and I to each of the four study sites. At times, they also helped with translation.

Data I draw on that was not collected during fieldwork included publicly-available institutional documents from the UN and GOE, as well as some internal MNGO documents. The internal MNGO documents were shared with me in my capacity as a technical advisor to the ESAR, with the understanding that I was also there in my capacity as a graduate student, and would be using these materials in this dissertation. Requests for further documentation from the MNGO, such as funding proposals for the seed aid distributions, were not granted.

Data analysis methods. As described earlier, Chapters 4-6 present the results of my analysis. Here, I describe my analytical approach for each chapter. In Chapter 4, I draw on MNGO, UN, and GOE documentation, peer-reviewed and gray literatures, and GOE speeches. Documents enter the social field as receptacles of instructions, obligations, contracts, wishes, reports, and so on. They also enter as agents, and as such wield influence and are subject to manipulation and appropriation. This dual identity meant that documents were analyzed both substantively and discursively. That is, I considered the content contained within the documents, but also considered the production, consumption, and circulation of this information (Prior, 2008). By contrast, Chapter 5 draws principally on survey data collected during the ESAR. Data were cleaned in Microsoft Excel and analyzed in SPSS. Statistical methods include descriptive analyses, Independent Kruskal-Wallis tests, OLS regression, and correlation tests. In this chapter, I also used thematic coding to inductively and iteratively summarize farmers' qualitative appraisals of seed aid. To do so, I printed the comments and read them through a number of times, first assigning general categories, and later subdividing these categories (for example, "Complaints about Seed Aid" eventually became "Complaints about Seed Aid: Timeliness" and "Complaints about Seed Aid: Quantities"). My approach for Chapter 6 integrates analytic methods used in Chapter 4 and Chapter 5. Field notes, analyzed in conversation with the

literature, provided the basis of my arguments about seed aid's surveillance, conditionality, and selectivity. Analysis of GOE documents (including speeches) allowed me to set these dynamics in political economic perspective.

Issues of trustworthiness. Over its course, this project faced one principal threat to both validity and reliability, and it concerns the Ethiopian context itself, which, Keeley and Scoones (2000) note, exhibits:

a tendency towards authoritarianism, hierarchy, centralized rule and lack of transparency.... deference to hierarchy and equivocation, rather than directness of speech, are hallmarks of Abyssinian (Tigrayan and Amharan, but not all Ethiopian) culture. These traits arguably translate into bureaucratic cultures that are antithetical to bottom-up or decentralized practices and to reflexivity and learning. (p. 94)

For instance, in one females-only community meeting held in Oromia, even the most benign questions ("What plants did your household grow this season?") elicited little response, resulting in the ESAR team learning nothing substantive from the group, even after nearly forty minutes of discussion. The absence of collective female voices from the data represents a significant limitation of this dissertation.

On a different note, although one might expect a study of a project commissioned by its primary stakeholders (the MNGO itself) to suffer from confirmation bias, I did not observe this to be the case. On the contrary, the MNGO appeared open to a critique of their work. They did not appear to be jumping through an evaluative hoop.

Ethical issues. Several measures were taken to ensure the study was conducted ethically. During the course of the fieldwork, all participants were consented prior to being interviewed. The consent process, which was verbal, explained that participation in the interview was entirely

voluntary; that the participant could stop the interview process at any time; that there were no right or wrong answers to any questions; and that their answers in no way directly affected their access to subsequent seed distributions.

To ensure the ethical treatment of research participants, I also obtained approval from Penn State's Institutional Review Board for the study (Study 00007207). This required measures to secure the data set, to remove identifying information for research participants, and most importantly to demonstrate that the research itself posed no risk to subjects.

Finally, as a social science researcher, I consider it my responsibility to produce insights that are helpful to organizations with whom I partner. This is why I provide recommendations for seed aid research and policy in the concluding chapter of this dissertation (Chapter 7), rather than in an appendix (or outside of the dissertation altogether). It reflects a belief that, where possible, research should culminate in actionable insights.

Limitations. Although, in my view, this dissertation represents an advance in the study of seed aid programs, it has limitations. One weakness is evident in the ESAR household survey. The instrument was not configured to measure changes in food security resulting from seed aid. Given the documented impact of climate events on food security among Ethiopian agriculturists (World Food Program, 2013), and given the availability of rigorous, field-tested instruments that measure food security (Smith and Subandaro, 2007; Swindale and Bilinsky, 2006), this seems like a missed opportunity. Question 17 of Part V of the household survey (Appendix A) does inquire about the impacts of seed aid on food supply, but it is poorly operationalized (I do not believe it is either valid or reliable), so I excluded it from the analysis.

Second, although the rapidity with which the ESAR was implemented served as a strength for the MNGO, it is a limitation from the standpoint of the dissertation. The fast pace

and short timeframe of the ESAR fieldwork constrained my ability to develop richer, more emic understandings of the GOE's involvement in seed aid (and rural life more generally). In my view, the analysis presented in Chapter 6 does provide insights into these issues, but they could have been much richer and 'thicker,' had there been more time for interviews, observation, and focus groups. This is a constraint of building a dissertation from applied evaluation data.

Chapter Summary

In this chapter, I presented the research design for my dissertation. The project is a mixed methods case study that endeavors to explain the design, practice, and political economy of Ethiopian seed aid—namely, two seed aid programs implemented by a major NGO (MNGO) in 2016. To do so, I analyze primarily household survey data, community meeting notes, and institutional documentation. The field data were collected during the Ethiopia Seed Aid Review (ESAR) in late 2016 from eight woredas in four regions (SNNPR, Oromia, Tigray, and Amhara). A project commissioned by the implementing MNGO, the ESAR is the empirical basis of the dissertation.

Chapter 4

How Seed Aid Programs Work

Overview

This chapter discusses the procedural aspects of two specific seed aid distributions in Ethiopia in 2016. I describe the institutional processes by which Ethiopian emergency seed aid programs are planned, implemented, and evaluated (Figure 4.1). Doing so sets the context for the following chapters, where I examine how smallholder beneficiaries use seed aid (Chapter 5), and how GOE uses seed aid (Chapter 6).

Planning

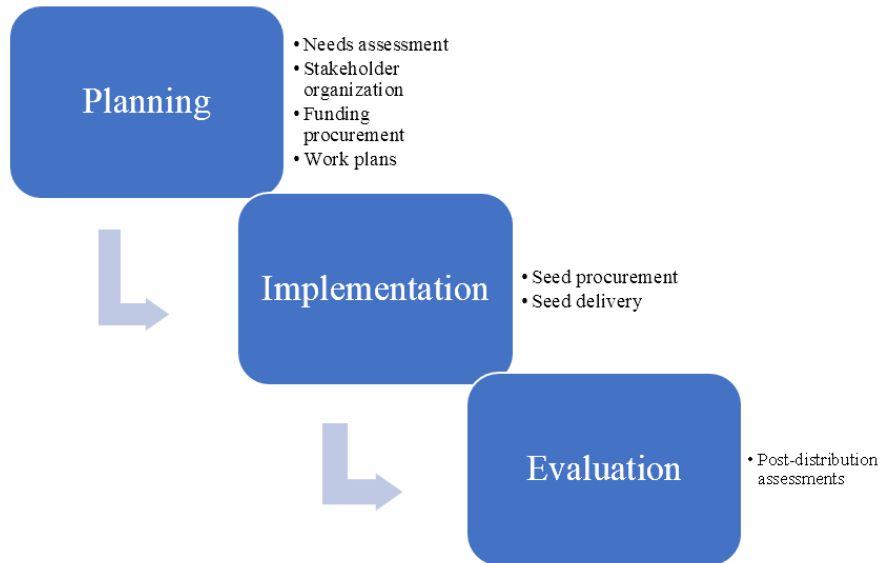
Government-led responses to disasters and crises in Ethiopia represent a long, complex history with labyrinthine institutional pathways.⁸ Seed aid was and is embedded in this history; it has never been a policy or an institution *sui generis*. As a result, the observable history of seed aid in Ethiopia is obscure and fragmented, with erratic and unamalgamated documentation, as Sperling et al. (2007) show. Here, I briefly trace this fragmented history within the broader evolution of aid institutions in Ethiopia.

The first documented instance of seed aid is 1974, following the establishment of the Relief and Rehabilitation Commission (RRC). The RRC was established as a response to the 1972-74 famine, which claimed the lives of some 200,000 Ethiopians, by some counts (Miller, 1984). The RRC “eventually grew to be arguably the largest and most powerful part of the Ethiopian government with the exception of the military” (Graham, Rashid and Malek, 2012, p.

⁸ See Lautze, Raven-Roberts and Erkinch (2009) for a helpful overview of humanitarian governance in Ethiopia.

260). A decade later, in October 1983, the RRC attempted to warn the donor community of another impending famine “a full year before the famine became global news” (p. 261) .

Figure 4.1
Three Stages of the 2016 Seed Aid Response in Ethiopia



The 1984-85 famine precipitated a decade of annual seed distributions by RRC, the UN, and the NGO community, as Sperling et al. (2007) show. When the Ethiopian People’s Democratic Revolutionary Front (EPDRF) came to power in 1991, the RRC was dismantled in order to be “brought down to size and turned to the will of the new government” (p. 264). The result of the reforms was the National Policy on Disaster Prevention and Management (NPDPM) and its administrator, the Disaster Preparedness and Prevention Commission (DPPC). The NPDPM aimed at:

....a congruence of relief effort and planned development to strengthen the economic fabric of the disaster-prone areas so as to mitigate the suffering of the affected population

and enhance their capability to face the challenge of such disasters in the future.

(Government of Ethiopia, 1993, p. 2)

Following the installment of the EPRDF regime in 1991, seed aid was distributed annually until 1995 in the form of DSD. Information on the geographic scope of DSD projects in this time period is limited, but northern regions of the country (especially Tigray) were a focus. In 1995, however, the seed relief project was ‘countrywide.’ No known evidence of seed aid exists for the latter half of the 1990’s. Annual distributions resumed in 2001, led by UNFAO, UNOCHA, and the GOE (Sperling et al., 2007). They have continued in some manner to the present day.⁹

In 2008, the GOE closed the DPPC and replaced it with the Disaster Risk Management and Food Security Sector (DRMFSS). In doing so, the government aimed to evolve beyond reactionary crisis governance, instead assuming a more proactive role, as the name suggests. Most recently, a 2013 policy sought to provide a comprehensive framework of disaster risk management, including major implementation strategies such as a decentralized DRM system, early warning and risk assessment, information management, capacity building, and an integration of disaster risk reduction into development plans (“Ethiopia: National Policy and Strategy on Disaster Risk Management,” n.d.).

⁹ Illustratively, see: “Food and Non-Food Humanitarian Appeal – February 2007 – Ethiopia” (DPPC, 2007); “Ethiopia – Food Insecurity” (IFRC, 2008); “Ethiopia: Food Security – Appeal Extension” (IFRC, 2009); “Humanitarian Response Fund: Ethiopia” (UNOCHA, 2010); “Emergency Appeal” (IFRC, 2011).

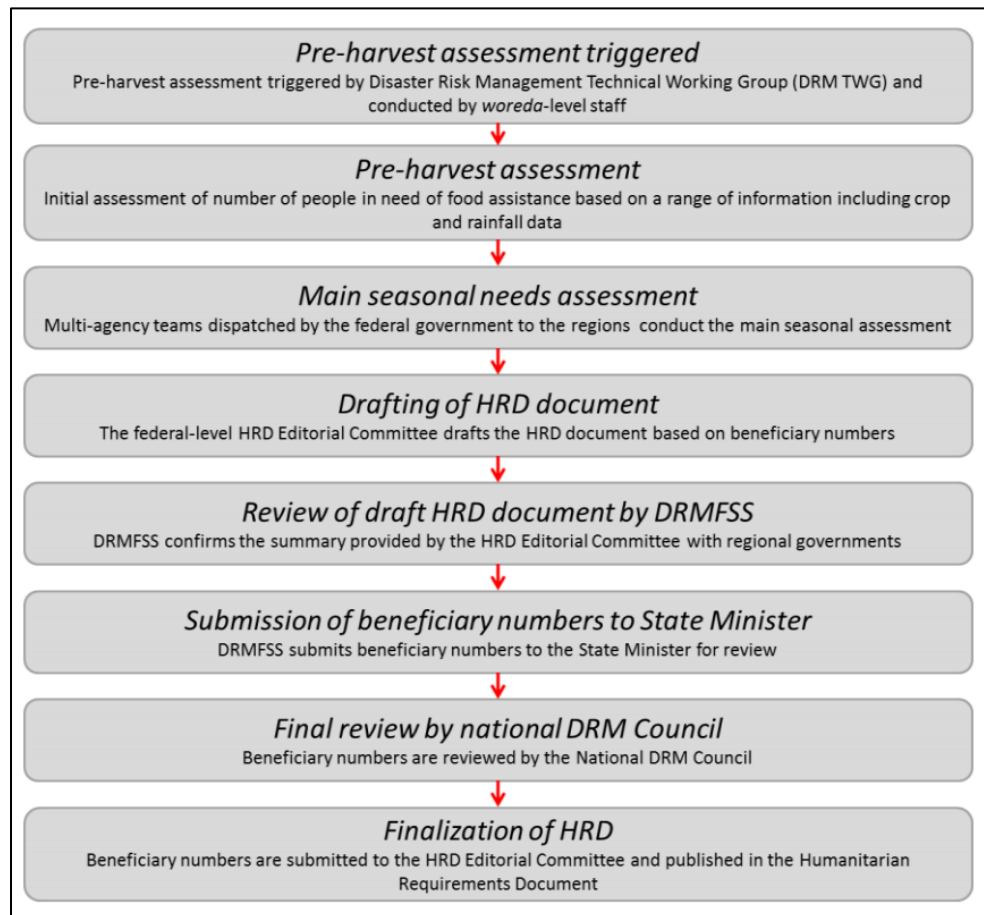
The 2008 and 2013 reforms were crafted to align with the United Nations Office for Disaster Risk Reduction's (UNISDR) 2005-2015 Hyogo Framework, a voluntary, non-binding agreement for reducing disaster risk among participating countries. The Hyogo Framework has since been replaced by the 2015-2030 Sendai Framework. The Sendai Framework builds on the premises of the Hyogo Framework by adopting the humanitarian rationalities of the day, such as resilience, local solutions, and inclusion (Staal, 2015). According to GOE, Ethiopia's commitment to the Sendai Framework is most vividly illustrated in its 2015 creation of a standalone government institution, the National Disaster Risk Management Commission (NDRMC) (Kassa, 2017). For example, the official GOE proclamation that establishes the NDRMC defines its rehabilitation efforts as those “applied after a disaster which are necessary to restore to normal activities and life style and, [sic] build resilience to future shocks in affected areas” (“Regulation No. 363/2015,” 2015, p. 8688).

A broad consortium of government-led institutional stakeholders responded to the 2015-2016 droughts. In the agriculture sector alone, the government-coordinated response to the 2015-16 droughts included at least 43 partners: government ministries, NGOs, research institutions, and members of the donor community. This consortium was led by the Federal Disaster Risk Management Agriculture Task Force (DRM-ATF). The DRM-ATF and FAO jointly established two ad hoc groups to further support the emergency seed responses, the Emergency Seed Working Group (ESWG) and, subsequently, the Strategic Advisory Group (SAG). The DRM-ATF, ESWG and SAG “supported technical discussions—including agreement on operational emergency guidelines – planning exercises and resource mobilization. They were pivotal to providing timely humanitarian response in 2016” (FAO, 2016b, p. 1).

The warrant for, and scope of, seed aid programs are determined iteratively through ground-truthing. Beginning in 2011, humanitarian appeals by GOE and its partners (including those for seed aid) became enshrined in the annual Humanitarian Requirements Document (HRD).¹⁰ The HRD can now be viewed as the beginning of the planning process for seed aid – or, more precisely, the process that determines the extent to which seed aid, among other forms of aid, is required. Figure 4.2 depicts the work process for the HRD. Ostensibly, the empirical bases of the appeals made in the HRD are a series of woreda-level assessments that quantify seasonal needs. The principal needs assessment takes place each year following the Meher rains, involving some 200 government, UN, NGO and donor stakeholders (Drechsler and Soer, 2016). The assessment, which is implemented by these inter-agency teams that have been dispatched by the federal government, includes meetings with local authorities, community leaders, and local residents (male and female) affected by the crisis (GOE/JHP, 2015). These assessments are conducted in specific woredas. The woredas are selected through coordination between assessment teams and the regional-level governments, based on pre-harvest assessment results.

¹⁰ Prior to 2011, humanitarian appeals by GOE were also issued, albeit in less glossy forms.

Figure 4.2
The HRD Process



Source: Drechsler and Soer (2016)

The findings of the post-Meher assessment in 2015 (the third box from the top in Figure 4.2) were especially grim. Although parts of Ethiopia are chronically prone to drought, the failures of the Belg and Meher rains in 2015 were the most pronounced in decades, prompting GOE and its partners to identify some 10.1 million Ethiopians as beneficiaries of aid for 2016—more than 10% of the country’s population.¹¹ Among the “key humanitarian issues” were threats

¹¹ In 2016, the poverty rate in Ethiopia was 23.5% (UNDP, 2018).

to livelihoods, which “have been destroyed due to livestock death or poor health or remain precarious due to limited access to seeds and other agricultural inputs for the coming year” (p. 4). However, seed itself represents a very small share of the HRD’s aid portfolio. Emergency seed accounted for less than 1% (\$3.4M) of the total humanitarian requirement projections (\$1.4B). The vast majority—86%, or \$1.2B—was devoted to food aid (Figure 4.3).

Figure 4.3
The Share of Agriculture in Humanitarian Requirements Projections for 2016

SECTOR	# PEOPLE TARGETED	TOTAL REQUIREMENTS US\$	AVAILABLE RESOURCE US\$	NET REQUIREMENTS US\$
General Ration: MT				
Gross: 1.5M MT				
Cereals: 1.2M MT	10.2M*	1.2Billion*	158.2M	1.0Billion
Blended Food: 202,843 MT				
Pulses: 121,443 MT				
Oil: 36,433 MT				
Net MT: 1.0M				
FOOD SUB TOTAL		1.2Billion	158.2M	1.0Billion
Health and Nutrition	2.1M & 3.6M	129.1M		
WASH	5.8M	73.4M		
Agriculture	2M	46.3M		
Education	1.3M	16.7M		
Protection	0.8M	11.9M		
Emergency Shelter/NFI	2.5M	8.2M		
NON FOOD TOTAL		212.2M		
TOTAL	10.2M	1.4Billion	158.2M	1.2Billion

PRIORITY	ACTIVITY	BENEFICIARIES	REQUIREMENTS US\$
Pastoralist zones – Afar and northern Somali regions			
Category 1	Provision of emergency livestock feed for core breeding animals to the next rains	0.1M	4.6M
	Provision of fast growing forage planting materials	0.1M	0.1M
	Provision of emergency seeds	0.1M	0.1M
	Animal health support	0.4M	0.6M
	Slaughter destocking – for nutritional support to children and safe carcass disposal	1.1M	3.4M
Category 2	Emergency vaccination for livestock after the return of the rains	(beneficiaries counted in animal health above)	2.2M
	Restocking with sheep and goats *	-	-
	De-silting through cash-for-work of livestock drinking ponds	0.1M	2.9M
Belg and belg/kiremt smallholder farming zones – Tigray, Amhara, Oromia and SNNP regions			
Category 1	Provision of emergency seeds	2.2M	3.3M
	Provision of emergency livestock feed for core dairy cattle and plough oxen	0.4M	12.5M
	Animal health support and vaccination after the return of the rains	1.5M	4.7M
	Commercial/ slaughter destocking – for nutritional support to children and safe carcass disposal	2.9	9.5M
Category 2	De-silting through cash-for-work of livestock drinking ponds	0.1M	2.4M
TOTAL REQUIREMENTS		2M	46.3M

*An assessment to be made after 1 season of good rains to determine the viability and appropriateness

Source: GOE/JHP (2015a, 2015b)

Figure 4.4
Updated Seed Requirements Create a Response Gap

ESTIMATED SEED REQUIREMENTS BY REGION AND CURRENT TARGETED RESPONSE ³ (as of 8 January 2016)					
Region	Households requiring seeds		Households targeted with seed support		Gap ^{***}
	Identified in the HRD (December 2015)	Identified in the DRM-ATF Road Map (January 2016)	NGO-led response target*	Government-led response target**	
Afar	600	1 226	250	613	363
Amhara	150 082	145 448	334	72 724	72 390
Dire Dawa	479	957	0	479	478
Oromia	175 810	313 092	149 826	156 546	6 720
SNNP	26 809	30 470	368	15 235	14 867
Somali	19 200	94 502	334	47 251	46 917
Tigray	104 192	252 280	0	126 140	126 140
Total	477 171	837 975	151 112	418 988	267 875

*Intended response targets with secured funding as reported by NGOs up to 8 January 2016
 **Current intended maximum response targets (depending on funding available)
 ***Minimum number of households requiring seeds not covered by currently funded responses

Source: FAO (2016a)

In early 2016, however, the DRM-ATF released updated projections for seed requirements for 2016, which demonstrated that, between the efforts of the government-led response and the efforts of NGOs, sizeable “response gaps” remained (Figure 4.4). The gaps expanded the role of the FAO, which theretofore had played a coordinating role in emergency seed distributions.

...in light of the soaring needs that threaten to overstretch the capacities of these actors, discussions among Government and NGO stakeholders have affirmed the need for FAO to address the needs of the most-affected woredas not presently covered by Government or NGO response plans. (FAO, 2016, pp. 6-7)

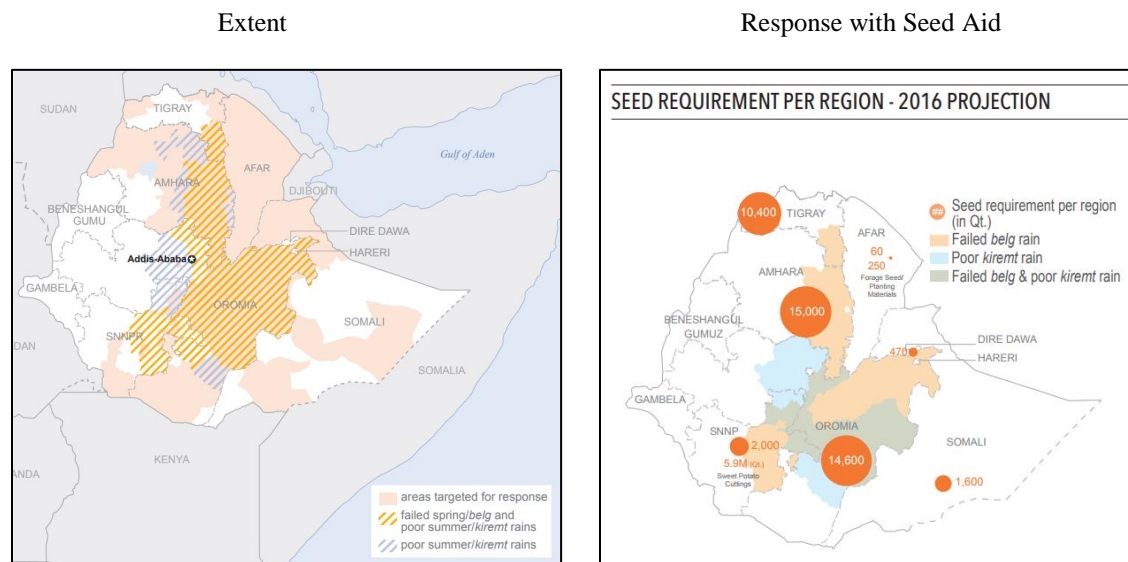
Although it is unclear from available documentation how estimated seed requirements are quantified, the calculation appears to be an estimate of households within regions where seasonal rains failed (Figure 4.5).

A footnote in the FAO’s Post-Distribution Assessment (PDA) underscores how sizing an emergency response is difficult and therefore iterative.

In consultation with the DRM–ATF and regional Bureaus of Agriculture, the emergency seed requirements for 2016 – published in the December 2015 Humanitarian Requirements Document – were revised three times owing to their original drastic underestimation. A consensus was reached, with 1.7 million households requiring emergency seed assistance for the 2016 Meher season alone. (FAO, 2016b, p. 2)

Ostensibly, seed aid is delivered to those regions that need it most. Figure 4.5 illustrates an instrumental humanitarian logic of beneficiary selection for seed aid at the regional level. SNNPR, Tigray, Oromia, and Amhara, being among the hardest-hit regions, were identified as the principal regions for emergency seed. However, the seed aid distributions within these regions—who got what—were subjected to localized politics, an issue to which I return in Chapter 6. It does not appear that the selection of regions was politically influenced, although GOE has historically used food aid to transfer resources to favored regions (Jayne et al., 2001).

Figure 4.5
The 2015 Drought: Extent and Response at the Regional Level



Source: GOE/JHP (2015a)

Implementation

The previous section describes the broad institutional context in which the 2016 responses to the El Niño droughts unfolded. Here, I downscale the analysis, focusing the discussion on the procedures and experiences of one major NGO that implemented a portion of the DRM-ATF's response strategy for the Meher 2016 growing season. Doing so allows us to make more concrete analyses about the nature of the seed interventions under evaluation in the ESAR.

The MNGO under consideration here was one of a number of agencies that received funding for the emergency seed distributions from USAID's OFDA via FAO for the Meher season.¹² Funding in hand, the MGNO subcontracted nine implementing partners (both international and Ethiopian organizations) to manage the distributions in a total of 52 woredas in Amhara, Oromia, SNNPR and Tigray. Sub-recipients signed off on a set of guidelines stipulated in part by the donor. Figure 4.6 summarizes these guidelines and their essential elements. Although the actual practices associated with seed distributions obviously diverge from these procedures (Chapter 6), at least four things are worth noting about the procedures themselves.

¹² As discussed in Chapter 3, the MNGO also previously implemented an OCHA-funded emergency seed project aimed to assist smallholders for the Belg 2016. The discussion on implementation here focuses only on the Meher 2016 project, as Figure 4.6 indicates.

Figure 4.6
Implementation Guidelines for the MNGO's Subcontractors

Guideline	Key Elements
1. Project period	· <i>Meher</i> 2016 only, beginning May 2016
2. Project management	· Developed Detailed Implementation Plan (DIP) · Establish technical team to facilitate project implementation · Monitor project according to DIP
3. Seed procurement	· Must obtain a seed grower certificate for all seeds purchased · Preference for improved varieties from formal sector sources (seed enterprises, private seed companies, cooperative unions, primary cooperative seed grower groups); informal sector purchases should be last resort · Preference for locally adapted and short season varieties
4. Quality assurance	· Obtain evidence of quality (e.g., germination tests) · Adhere to specified USAID quality standards
5. Orientation	· Orient community stakeholders prior to identification of beneficiaries
6. Targeting	· Establish a committee or work through existing woreda Food Security Task Force (WFSTF) and kebele Food Security Task Force (KFSTF) to identify seed beneficiaries · Identify target kebeles and households in need (disaggregated by sex)
7. Beneficiary selection criteria	· Beneficiaries must meet all three of the following criteria: ○ Seed insecure households (those who have lost all or most of their harvest and have not retained seed) ○ Households without adequate means to purchase seeds (limited assets, limited social networks, no livestock, no other income source, including remittances) ○ Adequate land and labor to appropriately use seed · Beneficiaries must meet at least one of the following criteria: ○ Priority to female-headed households with land and labor ○ Households with malnourished children ○ Households with more than one child less than five years old, or at least one less than two years old ○ Representatives of persons with disabilities or chronic illness ○ A household leasing out land because of a shortage of seeds
8. Validation	· Post list of proposed beneficiaries publicly · Gather community members, read out selection criteria and proposed list of selection criteria · Allow people to protest, or suggest additions/removals
9. Feedback mechanisms	· Establish a committee of community members to hear complaints · Establish feedback mechanism (hotline, email, helpdesk, etc.) to receive, analyze, and respond to feedback
10. Distribution mechanism	· Use voucher system · Recipients and local kebele leaders must provide signature verifying distributions
11. Finance	· Reimbursements honored as long as they do not exceed budget

Source: MNGO Internal Document

First, seed aid is delivered through a process of devolved subsidiarity. We note a logic of subsidiarity, in which decision-making processes are hierarchically devolved to local partners

with experience in the area. Following a set of non-negotiable guidelines emanating from both donor policy and the standards of the MNGO itself, the subcontractors are freed within these parameters to procure their own seed; to identify beneficiaries; to work or not work through existing woreda- and kebele-level task force; and to design appropriate feedback mechanisms, among other things. This is matter of path dependency, insofar as the MNGO leverages local partners who have worked with them before and/or are currently working with them as subcontractors on other ongoing projects. Relying on established partnership infrastructure at the sub-regional level is an even greater likelihood in emergency contexts, where time is of the essence. Indeed, these relationships are an important part of the basis of the MNGO's capacity for effectively implementing a project, at least from the perspective of the donor.

Second, although the specific assumptions underlying the MNGO's guidelines for seed procurement are ambiguous, they are also normative. For instance, the preference is for improved varieties of seed ("where possible") from formal sector sources. Is this because improved varieties, and improved varieties alone, the type of seed demanded by smallholders? Provisionally, yes, according to the farmers in the ESAR sample. (See Chapter 6.) To be more precise, farmers want certain characteristics associated with improved varieties—namely, higher yields. The generalized assumption among farmers is that improved varieties produce better yields. This assumption may be shared by the MNGO, but that is speculation, and it certainly does not necessarily imply the guideline is demand-driven as such. It is finally ambiguous what the MNGO's assumptions about improved varieties are, seeing as the document represented in Figure 4.6 is not a position paper on the merits of improved varieties for smallholder agricultural development. We cannot say from this perspective why the MNGO prefers improved varieties,

only that they do and that, provisionally and perhaps fortuitously, this aligns with farmers' preferences.

Third, the beneficiary selection process is both inclusionary and exclusionary, and these opposing characteristics appear linked. The process is inclusionary in the sense that it is participatory, at least hypothetically. MNGO partners have the option to work through existing kebele- and woreda-level committees focused on food security (Food Security Task Forces), which themselves are comprised of residents. They are also instructed to vet their beneficiary lists with the community, allowing residents to argue for additions or removals. This dynamic produces contradictions. For instance, a major theme noted in the ESAR was the ubiquity of corruption within the kebele- and woreda-level administrative bodies themselves (i.e., the Food Security Task Forces). Many participants cited the favorable consideration given to certain residents, not on the bases of vulnerability or need but on the bases of their social networks and political affiliations. This resulted in scenarios where the committees that were intended to be leveraged as participation mechanisms became effective mechanisms of exclusion.

Finally, seed aid does not target the poorest of the poor. The beneficiary selection criteria exclude this group. One of the three requisite selection criterion is that a household has adequate land and labor to make use of emergency seed. Households led by children or elders tend to be especially vulnerable precisely because of the labor deficit their household demographics creates. By the same token, vulnerable households may lack adequate access to land at the moment of beneficiary selection (even if they could potentially leverage seed aid for land access through barter or sharecropping). Indeed, by stipulating a minimum capital threshold (land and labor), the MNGO establishes a demographic target group for the seed aid distributions—vulnerable households, to be sure, but not the most vulnerable households. This can be seen as a calculated

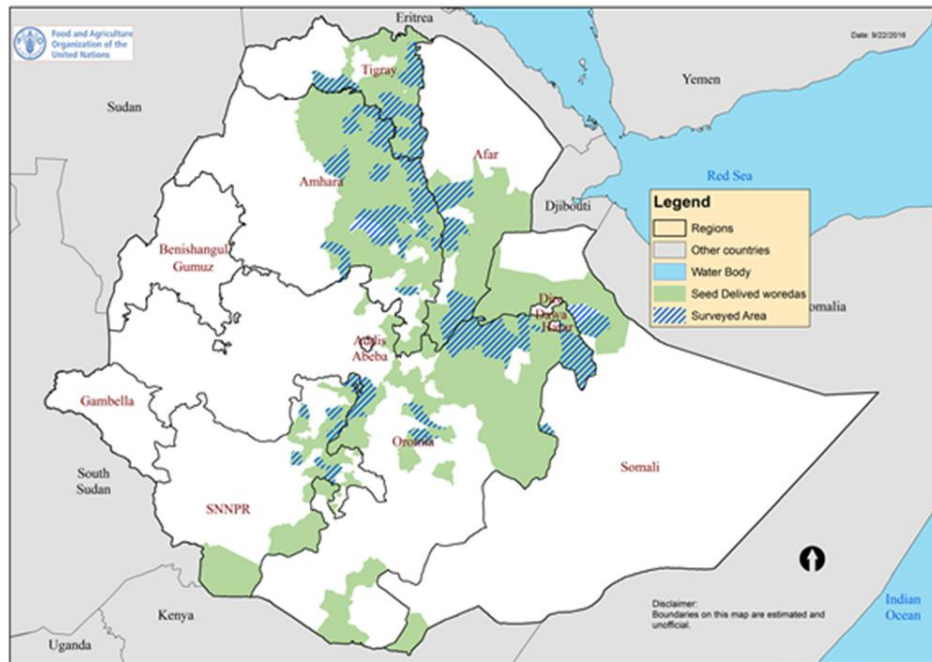
or pragmatic decision. After all, seed is an input that is not inherently useful to recipients who do not, or cannot, cultivate crops. The MNGO may implement other aid programs (such as food aid) that more effectively target the poorest of the poor. Still, a pointed question remains.

...who should be targeted? Is it the poor without the resources (land, labour, draft power, capital, etc.) who might not have the ability to put the [inputs] to the rightful use or is it the better off who have enough resources and therefore have the ability to put the inputs to rightful use but who can also do without donations? (Foti, Muringai, and Mavunganidze, 2007, p. 221)

Evaluation

The MNGO's emergency seed distributions accounted for a significant share of the country-wide seed aid initiative implemented by the DRM-ATF in 2016. In October 2016, the FAO coordinated a post-distribution assessment of the entire intervention, which reached 1.5 million households (approximately 7.5 million people) with 32,000 tonnes of seed across 377 woredas in SNNPR, Tigray, Oromia, and Amhara (FAO, 2016b). This scope is depicted in Figure 4.7. Figure 4.7 also depicts the areas selected for assessment in the PDA. In these areas, the assessment team sought to determine whether households found the seed aid to be of appropriate quality, quantity, timeliness, type/variety, and to determine the "overall effectiveness" of the distributions. To do so, the assessment reportedly engaged some 2,300 stakeholders in focus groups, surveys, and semi-structured discussions. We can make several observations about the evaluation process as it is represented in the PDA.

Figure 4.7
Woredas Targeted for Seed Aid and the Subsequent Post-Distribution Assessment



Source: FAO (2016b)

First, FAO evaluated its own work on the seed aid programs. Doing so presents a clear threat to the study’s validity, since those conducting the research have a vested interest in favorable findings. The PDA does not address its attempts to mitigate such bias, but it does seem cognizant of this methodological shortcoming.

The findings of the PDA confirm the importance of a final, independent impact assessment that would complement these findings and fill in gaps related to yields and final impact on households’ food security, nutrition and income. It is, therefore, strongly recommended that an independent impact assessment is carried out after Meher harvest, perhaps in early January 2017. An independent impact assessment would provide an enhanced understanding of the final outcomes of the emergency seed response. It would

also gather lessons learned, which would inform future decision-making processes to ensure optimal use of limited resources. Moreover, documentation of best practices in the field would also be highly worthwhile. (FAO, 2016b, p. 8)

Second, the FAO's self-evaluation appears biased at times. This is best illustrated in an excerpt of the report's conclusion and in an FAO press release.

The results of the PDA were *overwhelmingly* positive.... The emergency seed response has enabled El Niño-induced drought-affected households to continue farming; their plots would have otherwise been planted with *very poor quality* seed, or in worst case scenarios, left unplanted....If all production and yield variables continue to be good, it can be expected that normal to above-normal yields will improve food security in affected regions as a result of the emergency response interventions. This will decrease vulnerable farming households' dependence on food aid. According to preliminary calculations, if emergency seed had not been provided on time and in the right quantity and of good quality, the costs of food assistance for these vulnerable communities would have *exceeded* USD 500 million to cover *just six months*. Humanitarian seed provision, therefore, resulted in *significant short- and longer-term* savings for the Government and international humanitarian community. (FAO, 2016b, p. 7, emphases mine)

Ethiopia is about to complete one of the largest and most successful seed distribution campaigns in the country's history, aimed at helping farmers stay on their feet in the face of a blistering drought caused by El Niño, FAO said today. 'Projections are that Ethiopia's 2016/17 harvest will be average to above average – a massive achievement coming on the heels of one of the worst droughts in recent memory,' said Amadou Allahoury, FAO Representative in Ethiopia. (FAO, 2016c, emphases mine)

FAO's claims seem reasonable. After all, as de Waal (2018) notes, the 2015-16 crisis in Ethiopia claimed nearly zero lives, whereas the 1973 famine claimed 200,000 lives, and the 1984 famine claimed 600,000 lives. However, FAO seems intent on invoking the spectre of the counter-factual: what would have happened had they not intervened? This implicit question could be seen as opportunistic, or as lying beyond the scope of an empirically-focused evaluation.

Third, the MNGO's evaluations were more self-critical. For its part, the MNGO conducted its own PDA and also commissioned an independent evaluation, the ESAR, the latter of which I analyse in the following chapter. For present purposes, it is worth noting two things. First, although the FAO paid lip service to the importance of an independent evaluation, the MNGO implemented one, in the form of the ESAR (FAO, 2016b). Second, although the MNGO's PDA was more understated than that of FAO's, the conclusion was similar.

The assessment results verified that the emergency response intervention was effective and efficient and positive results were observed in terms of:

- beneficiary targeting,
- providing the seed of preference/choice,
- providing quality seeds,
- timely distributing the seeds [sic],
- proximity of distribution sites to the community, and
- establishing a complaint hearing and responding mechanism.

Household interviews, [focus group discussions] and [key informant interviews] confirmed that beneficiaries were happy with the support and the seed distributed, with

the exception of a few complaints regarding delay in seed supply and in some cases on unavailability of preferred varieties.

If all production and productivity variables continue normal [sic] and based on the crop performance, normal to above normal yield could be expected from the emergency response intervention. (MNGO, 2016)

As with the FAO's PDA, the basis of establishing a successful project is the projection of good yields in the following season, even if the language here is qualified (yields "could be expected").

Fourth, it is unclear whether the absence of discussion on the influence of politics is legitimate oversight or a strategic omission. Neither the MNGO's PDA and the FAO's PDA address dynamics of corruption and coercion on the part of GOE in the seed aid programs. These issues were widespread, as I show in subsequent chapters. I see this silence as wilful ignorance and a calculated evasion of censorship, given GOE's increasing authoritarian paranoia over NGOs. Evading scrutiny is a common survival strategy among NGOs working in places like Ethiopia (Dupuy, Ron, and Prakash, 2015).¹³

Limitations

Much of the institutional documentation on seed aid programs is considered proprietary, given the often-competitive basis on which organizations bid for aid funding. This may be

¹³ In June 2016, for example, GOE's Charities and Societies Agency, which regulates NGOs, announced that it had shut down more than 200 NGOs in the last nine months. "The agency cited failure to comply with numerous requirements of the Charities and Societies Proclamation (CSP) and lack of funding as reasons for the closures" (Badwaza and Charette, 2016).

understandable, but it limits the analysis to select documentation to which I was made privy during the course of the ESAR. (Requests for further documentation—e.g., on funding solicitations—were not granted.) Nonetheless, the findings I present here advance our understanding of the institutional dynamics of seed aid.

Also, I do not suggest seed aid always looks like it did in Ethiopia in 2016. Many of the specifics on which I will elaborate here are potentially unique to their time and circumstance. At the same time, my aim is to provide a generalized schema of the core processes of the 2016 Ethiopian seed aid projects. For instance, consider the linear depiction of seed aid programs in Figure 4.1. The relationship between planning and implementation efforts is more iterative in practice. (Consider, for example, that the emergency seed requirement figures for 2016 were revised three times.) However, the figure heuristically underscores an important point. Seed aid programs are more than rote implementation. They involve significant efforts of planning and evaluation, as well. In degree or in kind, such efforts may not always be true of seed aid programs, but this schema establishes a basis of comparison.

Chapter Summary

In this chapter, I explained the processes by which seed aid interventions in Ethiopia in 2016 were planned, implemented, and evaluated. A key implication is that seed aid programs are not simple matters of rote implementation. Their planning and subsequent evaluation phases are complex, involve myriad stakeholders, and embody significance for institutions. Particularly, planning is a lever for resources, and evaluation is an opportunity to demonstrate institutional legitimacy. This chapter sets the context for Chapters 5 and 6.

Chapter 5

How Smallholders Use Seed Aid

Overview

This chapter analyzes quantitative and qualitative data collected with smallholder households for the ESAR in September 2016. Research Questions 2.1-2.5 frame the discussion, which together guide an analysis of how farmers used and viewed the seed aid they received.

Research Question 2.1: How did the use of seed aid differ among households?

Research Question 2.2: How did the overall share of seed sown that was derived from seed aid differ among households?

Research Question 2.3: Was the receipt of seed aid among households associated with changes in sowing quantities?

Research Question 2.4: Was seed aid a source of new varieties?

Research Question 2.5: What open-ended feedback did farmers provide?

The chapter's structure is as follows. In the first section, I describe ESAR recipients' uses of seed aid (Research Question 2.1). My expectation here is that the way seed aid is used varies by context and by the particular type of seed aid given. By contrast, I expect similarities in seed aid use across SES and different household types (as defined by age of household head and gender of household head, respectively). My rationale firstly is that because droughts are covariate shocks, they similarly affect households and their farms, and thus their seed aid uses, within a given subregional locality.¹⁴ It is conceivable, then, that across regions, differences in seed aid use will be observable. Secondly, as for differences in use across seed aid crops, my

¹⁴ My expectation is that, although the Ethiopian droughts of 2015-16 were country-wide, the spatial scale of covariation is within agroecological zones. Each region in the ESAR is comprised of multiple agroecological zones (Chamberlin and Schmidt, 2011).

rationale is that seed aid crops can simply have different intended uses, regardless of their being sourced from an aid program.

In the second section, I analyze the relationship between seed aid and household sowing dynamics (Research Questions 2.2 and 2.3). Sowing decisions can be seen as one indicator of smallholder agricultural recovery following a disaster, since sowing implies the farmer actually has seed to sow, the labor-power to sow it, and the confidence that the ‘investment’ will provide livelihood returns. As with seed aid uses, I expect, and test for, regional differences in the overall share of seed sown that farmers in the sample derived from seed aid. I also hypothesize that the relationship between the quantity of seed aid received at the household level and the rate of change in household sowing quantities is dependent upon the type (crop) of seed aid. A broader rationale behind these first two sections (Research Questions 2.1 – 2.3) is to provide policymakers with insight into what farmers do, and do not do, with seed aid they receive, and why.

More qualitative in nature, the third and fourth sections take an exploratory approach to two other issues. The third section (Research Question 2.4) examines seed aid’s function as a de facto temporary market for new varieties, a dynamic that is in some ways unique to the Ethiopian context (McGuire, Sperling and Man, 2016). The fourth section (Research Question 2.5) looks at farmers’ appraisals of seed aid, identifying themes based on a qualitative analysis of unstructured feedback. The rationale for the third and fourth sections (Research Questions 2.4 – 2.5) is that inductive explorations of qualitative ESAR data can also produce insights that are helpful to policymakers.

Uses of Seed Aid

In this section, I discuss differences in how households in the ESAR sample used seed aid (Research Question 2.1). The ESAR sought to understand how smallholders utilized seed aid at specific points in time—namely, at the beginning of the respective cropping seasons when it was received, Belg 2016 and Meher 2016, both of which were discretely critical times of vulnerability for smallholders. Generally speaking, however, seed utilization can follow a number of different pathways over time, as Figure 5.1 illustrates. The pathways develop according to the livelihood decisions smallholders make in expanding production (planting); leaving cultivation areas fallow (storage); liquidating seed stores in return for cash or other goods (selling/exchanging); and/or meeting immediate food needs (consumption). For instance, seed that is initially planted for a given cropping season may, after that season, be stored and subsequently consumed in a latter cropping season. Alternatively, seed may be consistently diverted to storage across seasons in the face of unfavorable growing or market conditions (i.e., drought or low prices), only to be eventually exchanged or sold. Although not accounted for by the ESAR, such dynamism is a useful context for the discussion on seed aid uses presented here. Seed use is as varied across time as it is across space.

Figure 5.1
Utilization Pathways of Seed Aid

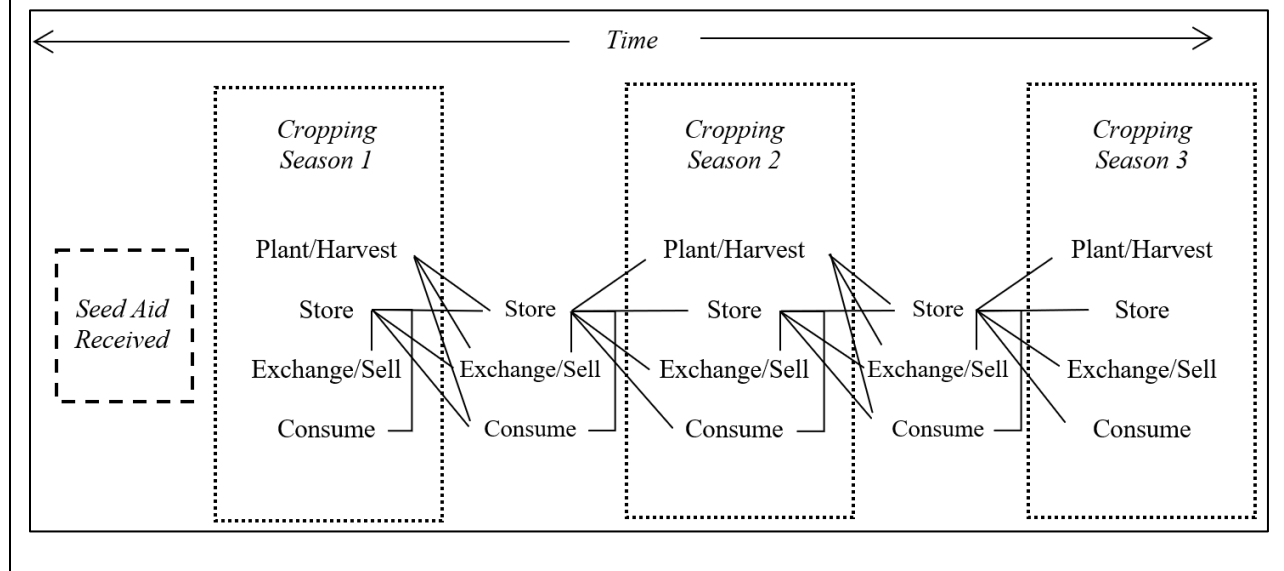


Table 5.1 displays the results of Independent-Samples Kruskal Wallis tests, which were implemented to determine if there were significant differences in the regional distributions of the proportions of four respective seed aid use categories—seed aid planted; seed aid eaten; seed aid exchanged/sold; and seed aid stored—for both the Meher and Belg planting seasons. Three of these distributions were found to be statistically significant. All of these were associated with the Meher cropping season: the share of seed aid planted ($p = .000$), eaten ($p = .000$), and stored ($p = .000$).

Regional distributions within each use domain were not similar, as assessed by visual inspection of a boxplot. As such, medians or means could not be compared or tested across regions. (They are nonetheless presented in Tables 5.1 and 5.2 for general informational purposes.) Instead, for each of the three use domains with significant regional differences, pairwise comparisons of mean ranks were performed using Dunn's (1964) procedure with a

Bonferonni correction for multiple comparisons.¹⁵ The mean ranks for the share of seed aid planted in Oromia (209.51) and Tigray (208.33) were relatively higher than those of SNNPR (167.65) and Amhara (168.49).¹⁶ This explains why the respective pairwise comparisons between SNNPR and Amhara and between Tigray and Amhara were not statistically significant, as opposed to pairwise comparisons that were significant (SNNPR-Tigray; SNNPR-Oromia; Amhara-Tigray; Amhara-Oromia) ($p = .000$ in all cases).

It follows that regions with higher mean ranks for the share of seed aid planted had relatively lower mean ranks for the share of seed aid eaten. This was the case for Oromia (178.23) and Tigray (176.50), which had lower mean ranks for the share of seed aid eaten compared to those of SNNPR (202.84) and Amhara (196.39). Accordingly, regional differences were significant between Tigray and Amhara ($p = .037$); Tigray and SNNPR ($p = .002$); and Oromia and SNNPR ($p = .004$), respectively.

¹⁵ Henceforth, “pairwise comparisons” refers to tests that also use Dunn’s (1964) procedure with a Bonferonni correction for multiple comparisons.

¹⁶ In the Kruskal-Wallis test, mean ranks are used as a basis of comparison when the dependent variable does not have similarly shaped distributions across categories of the independent variable. With mean ranks, all observations are rank-ordered from lowest (rank 1) to highest (rank N). For instance, in the case of the proportion of seed aid planted during the Meher, a total of 376 observations were recorded (Table 5.1). Of these 376 observations, the average rank for Oromia is 209.51, which was the highest among the four regions. This means that, compared to other regions, households in Oromia had the highest average rank for the share of seed aid planted during the Meher.

A similar pattern is observable in pairwise differences in the share of seed aid stored. Oromia (175.00) and Tigray (177.13) had lower mean ranks than those of SNNPR (196.57) and Amhara (205.35). Accordingly, differences were significant between Oromia and SNNPR ($p = .013$); Oromia and Amhara ($p = .000$); Tigray and SNNPR ($p = .039$); and Tigray and Amhara ($p = .000$), respectively.

Several observations summarize the import of these analyses. First, for the Meher cropping season, the degree to which seed aid recipients in the sample planted, ate, and stored seed aid differed in statistically significant ways by region. Second, pairwise comparisons show that these differences are located between some pairs of regions, but not all. For instance, the difference in the share of seed aid planted was not statistically different between SNNPR and Amhara, on the one hand, nor between Tigray and Oromia, on the other. This observation raises a final point. Households in contiguous regions decided to use seed aid in significantly different ways. For instance, aid recipients in Oromia ranked highest in the share of seed aid planted, whereas in SNNPR, a neighboring region to the west, aid recipients ranked lowest (and this pairwise difference was statistically significant). This illustrates how farming decisions (like what to do with seed aid) are influenced by local (subregional) factors. For example, although drought was cited as a pervasive production constraint in community meetings in both SNNPR and Oromia, smallholders in SNNPR emphasized the lack of oxen as an additional constraint. In some cases, smallholders did have oxen, but were forced to sell them following the crop failures induced by drought. As one respondent in SNNPR vividly put it, “I have no oxen because my children are in the school [so] for that I sold it and I use my neighbors’ oxen when they have finished their land and then the sowing time is less and the production is less.” Another in SNNPR said, “I have no oxen at the time of sowing. I use the neighbor’s oxen, but they refuse to

give it sometimes because their oxen are too tired after they sow their lands...I sow my land not on time.”¹⁷

As was observed in SNNPR, asset liquidation serves as a near-term coping strategy, but creates future problems (Gao and Mills, 2018). Thus, covariate shocks (drought) may induce ‘erosive coping’ (like asset sales), and the latter can deepen vulnerability to the former (UNDP, 2011; Shiferaw et al., 2014).¹⁸ That said, in Ethiopia, dissaving and a reduction in food consumption have been shown to be relatively more likely responses to natural shocks (Yilma et al., 2014).

¹⁷ *Human* labor power was rarely cited as a reason for planting less. For instance, for the Meher 2016 season, of the 280 reasons provided by households for planting less than normal, only 3% of responses indicated having no, or insufficient, labor. This question (around reasons for sowing less) applied to sowing behavior at the household level across all seed sources (not just to seed sourced from aid). Where productive capacity is concerned, the constraints to planting seed aid indeed seem to be rooted in limited draught animal power (oxen), rather than in limited human labor power.

¹⁸ At the same time, rainfall deficits have been shown to have an equalizing effect on intra-community livestock *inequality* in other parts of Ethiopia (Thiede, 2014).

Table 5.1¹⁹*Household Differences in Seed Aid Uses – by Region*

Meher

	Proportion of Seed Aid Planted	Proportion of Seed Aid Eaten	Proportion of Seed Aid Exchanged/Sold	Proportion of Seed Aid Stored
Means (n)				
<i>SNNPR</i> (94)	.87	.08	.00	.04
<i>Oromia</i> (96)	.98	.00	.01	.00
<i>Tigray</i> (92)	.97	.00	.02	.01
<i>Amhara</i> (94)	.86	.05	.00	.09
N	376	376	376	376
Test Statistic (Independent- Samples Kruskal- Wallis)	34.154	19.833	4.038	26.280
DF	3	3	3	3
Sig.	.000***	.000***	.257	.000***
* p<.05; ** p<.01; *** p<.0005				

¹⁹ Here and in subsequent tables, the N for the Belg season is consistently lower, because, relative to the Meher cropping season, fewer households received seed aid.

Table 5.1²⁰*Household Differences in Seed Aid Uses – by Region (continued)*

Belg

	Proportion of Seed Aid Planted	Proportion of Seed Aid Eaten	Proportion of Seed Aid Exchanged/Sold	Proportion of Seed Aid Stored
Means (n)				
<i>SNNPR</i> (42)	.87	.10	.00	.03
<i>Oromia</i> (0)	--	--	--	--
<i>Tigray</i> (17)	1.00	.00	.00	.00
<i>Amhara</i> (11)	.86	.05	.00	.09
N	70	70	70	70
Test Statistic (Independent- Samples Kruskal- Wallis)	5.066	2.741	--	3.052
DF	2	2	--	2
Sig.	.079	.254	--	.217
* p<.05; ** p<.01; *** p<.0005				

Comparing use proportions across seed aid crop types also reveals differences (Table 5.2). Using Independent-Samples Kruskal Wallis tests, the share of seed aid planted differed significantly across crops for both the Meher ($p = .000$) and Belg ($p = .014$) seed aid distributions. Pairwise comparisons with the Meher data on the share of seed aid planted reveal consistently significant differences for crops paired with chickpea (mean rank = 154.34), wheat (mean rank = 218.86), common bean (mean rank = 126.74), and teff (mean rank = 227.66), respectively, all of which were major seed aid crops. Likewise, most, but not all, differences in pairwise combinations within these four crops were also significant ($p = .000$ in all cases of

²⁰ Here and in subsequent tables, the N for the Belg season is consistently lower, because, relative to the Meher cropping season, fewer households received seed aid.

significance).²¹ Pairwise comparisons for the respective shares of seed aid eaten and stored during the Meher were generally statistically insignificant.²² This was also true in the Belg concerning the respective shares of seed aid planted and seed aid eaten, despite the general indication of statistically significant differences in these use categories.

The ESAR did not solicit explicit feedback about why recipients deferred specific seed aid crops to uses besides planting (such as consumption or storage), so it is not possible to directly explain differences in seed aid uses across crops. Still, we can make two observations. First, the mean (or average) ranks provided in the previous paragraph indicate that, in terms of the proportion of seed aid planted, teff was highest-ranked and common bean was lowest-ranked. Common bean's low rank is likely a reflection of its inherent nutritive value. Teff's high rank likely points to the fact that it is the most important cash crop in Ethiopia (Minten, Tafesse, and Brown, 2018). Cultivated crops are often themselves eventual sources of food security, of course, but from the perspective of the ESAR, the point is that, in some circumstances, seed aid may be treated as food. This has ramifications for the selection of what seed aid crops to distribute.

Second, generally speaking, farmers may choose to store seed for a multitude of reasons. The seed may have been received after the sowing period ended; the farmer may have lacked adequate land or labor; s/he may have decided to cultivate other crops; and/or adverse economic or agronomic conditions—such as low market prices or anticipated drought, respectively—may

²¹ The exceptions were wheat-teff and common bean-chickpea ($p = 1.000$ in both cases).

²² The exceptions were pairs including common bean, where the category was the share of seed aid eaten during the Meher. These were consistently significant ($p = .000$ in all instances).

have disincentivized sowing that particular crop. Indeed, insufficient land and poor prevailing weather conditions were cited as reasons some farmers in the ESAR sample indicated they sowed fewer kilograms of seed for the Meher season in question than they would have under ‘normal’ conditions (see Appendix D). As for the issue of timing, we return to this later in the chapter.

Table 5.2²³*Differences in Seed Aid Uses – by Crop*

Meher

	Proportion of Seed Aid Planted	Proportion of Seed Aid Eaten	Proportion of Seed Aid Exchanged /Sold	Proportion of Seed Aid Stored
Means (n)				
<i>Maize</i> (9)	1.00	.00	.00	.00
<i>Sorghum</i> (11)	.91	.00	.09	.00
<i>Common bean</i> (17)	.72	.28	.00	.00
<i>Sesame</i> (2)	1.00	.00	.00	.00
<i>Chickpea</i> (63)	.80	.05	.00	.14
<i>Wheat</i> (97)	.94	.03	.01	.01
<i>Barley</i> (29)	.84	.08	.00	.08
<i>Teff</i> (183)	.98	.01	.01	.01
Total (411)	.92	.04	.01	.03
Test Statistic (Independent-Samples Kruskal-Wallis)	82.747	76.432	10.270	60.854
DF	7	7	7	7
Sig.	.000***	.000***	.174	.000***
* p<.05; ** p<.01; *** p<.0005				

²³ The sample sizes in this table (n = 411 for the Meher and n = 81 for the Belg) are respectively larger than those in Table 5.1 (n = 376 for the Meher and n = 70 for the Belg) because some households received more than one seed aid crop.

Table 5.2²⁴
Differences in Seed Aid Uses – by Crop (continued)

Belg

	Proportion of Seed Aid Planted	Proportion of Seed Aid Eaten	Proportion of Seed Aid Exchanged /Sold	Proportion of Seed Aid Stored
Means (n)				
<i>Maize</i> (39)	.89	.08	.00	.03
<i>Sorghum</i> (2)	.60	.00	.00	.40
<i>Irish potato</i> (1)	1.00	.00	.00	.00
<i>Common bean</i> (4)	.83	.17	.00	.00
<i>Sesame</i> (3)	1.00	.00	.00	.00
<i>Chickpea</i> (4)	.38	.50	.00	.12
<i>Wheat</i> (3)	.67	.33	.00	.00
<i>Barley</i> (5)	.78	.12	.00	.10
<i>Teff</i> (20)	1.00	.00	.00	.00
Total (81)	.87	.09	.00	.04
Test Statistic (Independent-Samples Kruskal-Wallis)	19.218	16.920	.000	10.291
DF	8	8	8	8
Sig.	.014*	.031*	1.000	.245
* p<.05; ** p<.01; *** p<.0005				

Further tests analyzing differences in seed aid uses within the ESAR sample were found to be insignificant. This included analyses between male- and female-headed households (Appendix E), across ages of household head (Appendix F), and across the amount of land area cultivated by the household (Appendix G). These results are consistent with my expectations,

²⁴ The sample sizes in this table (n = 411 for the Meher and n = 81 for the Belg) are respectively larger than those in Table 5.1 (n = 376 for the Meher and n = 70 for the Belg) because some households received more than one seed aid crop.

which are that, in a drought scenario, farming households, regardless of their demographic profile, are widely focused on the same things: mostly replanting fields, but also diverting some seed to consumption and storage.

Seed Aid and Household Sowing

In this section, I discuss the relationship between seed aid and household sowing dynamics. As mentioned earlier, sowing can be one indicator of agricultural recovery following a disaster. Exploring how seed aid influences sowing patterns can provide aid policymakers with helpful insights into seed aid's role in agricultural recovery.

Two questions structure the analysis. First, how did the overall share of seed sown that was derived from seed aid differ among ESAR households (Research Question 2.2)? Second, was the receipt of seed aid associated with changes in sowing quantities among ESAR households (Research Question 2.3)?

In the sample overall, farmers sourced approximately 30% of the seed they sowed for both the Meher and Belg seasons from seed aid, when calculated in the aggregate by kilograms (Tables 5.3).²⁵ This measure varies widely crop by crop. For instance, staples like sorghum, teff and common bean are widely saved and available in local markets, so the share sourced from seed aid is predictably low. Maize, by contrast, is expensive and of diminishing value if saved across seasons (since it is typically hybrid varieties). Moreover, the Ethiopian state controls seed distribution in the country, making access to new varieties difficult (an issue we look at later in

²⁵ A 2007 assessment in the same regions (but different woredas within those regions) calculated this figure at 55% (Sperling et al., 2007).

the chapter). For these reasons, farmers would avail themselves of maize seed aid, especially if the variety on offer was not available anywhere else.

Table 5.3
Proportion of Seed Sown Sourced from Seed Aid

Meher

Crop	Total Sowed (Kgs)	% of Total				
		Home Saved /Own Stock	Friends, Neighbors, Relatives	Local Market	Community-Based Seed Groups	Seed Aid
Maize	134.5	1.5	14.9	46.5	0.0	37.2
Sorghum	1,801.4	54.2	10.5	30.0	0.0	5.3
Common beans	580.8	34.3	0.0	34.6	0.0	31.1
Pigeonpea	3.0	0.0	0.0	66.7	0.0	33.3
Sesame	2.0	0.0	0.0	0.0	0.0	100.0
Chickpeas	588.3	5.9	0.0	16.3	0.0	83.7
Wheat	12,782.5	35.8	2.3	17.5	3.2	41.2
Barley	2,855.0	22.8	6.1	26.7	0.0	44.4
Teff	11,158.9	38.6	2.5	44.8	0.0	14.1
Total (All Crops)	30,281.4	36.2	3.1	29.9	1.4	29.5

Table 5.3
Proportion of Seed Sown Sourced from Seed Aid (continued)

Belg					
Crop	Total Sowed (Kgs)	% of Total			
		Home Saved /Own Stock	Friends, Neighbors, Relatives	Local Market	Seed Aid
Maize	1,774.2	19.3	0.0	19.1	61.6
Sorghum	110.4	57.8	18.7	0.9	22.7
Irish potato	110.0	0.0	0.0	9.1	90.9
Common beans	783.3	37.9	3.2	48.7	10.3
Pigeonpea	49.2	70.5	4.1	23.4	2.0
Sesame	10.0	0.0	0.0	0.0	100.0
Chickpeas	97.0	14.2	0.0	32.2	53.6
Wheat	157.3	48.5	10.2	9.5	31.8
Barley	1,686.5	64.4	0.0	24.0	11.6
Teff	874.9	37.0	27.9	15.4	19.6
Total (All Crops)	5,811.3	40.1	5.3	24.0	30.6

However, for both the Meher and Belg aid distributions, the share of seed sown at the household level that was derived from seed aid differed significantly by region (Table 5.4) and by the amount of land area cultivated by the household (Table 5.5) – but not by gender or age of the household head (Appendixes H and I). For their part, regional differences were significant ($p = .005$), but pairwise comparisons for the Meher revealed they were limited to the differences between Tigray and SNNPR ($p = .047$) and between Tigray and Amhara ($p = .015$). During the Belg, the significant differences were limited to those between Amhara and SNNPR ($p = .000$) and between Tigray and SNNPR ($p = .001$). In neither season was the share of seed aid sown in Oromia that was derived from seed aid significantly different from any other region. These

regional differences are likely suppressing a composite of factors, such as the timing of the distributions (whether they arrived in time for sowing), the particular seed aid crops distributed in a region, the differences in sowing densities (kg/ha) required for those crops, and the absolute differences in quantities of seed aid received across regions. Later in the chapter, I present a model that predicts the degree to which a seed aid recipient's region influences the overall share of seed aid sown that they are able to derive from seed aid.

Table 5.4
Differences in Proportion of Seed Sown Derived from Seed Aid – by Region

Meher

	N	Mean	Median	Std. Dev.
SNNPR	106	.44	.40	.34
Oromia	96	.34	.28	.29
Tigray	98	.31	.20	.30
Amhara	99	.48	.50	.38

N	399
Test Statistic (Independent-Samples Kruskal-Wallis)	12.810
DF	3
Sig.	.005**
* p<.05; ** p<.01; *** p<.0005	

Belg

	N	Mean	Median	Std. Dev.
SNNPR	109	.41	.37	.39
Oromia	-	-	-	-
Tigray	40	.15	.00	.30
Amhara	82	.12	.00	.31

N	231
Test Statistic (Independent-Samples Kruskal-Wallis)	41.794
DF	2
Sig.	.000***
* p<.05; ** p<.01; *** p<.0005	

Table 5.5

Differences in Proportion of Seed Sown Derived from Seed Aid – by Land Area Cultivated

Meher

	N	Mean	Median	Std. Dev.
<0.5 ha	77	.51	.50	.34
0.5 - 1.0 ha	178	.39	.33	.34
>1.0-2.0 ha	81	.36	.27	.33
>2.0 ha	162	.29	.23	.31

N	398
Test Statistic (Independent-Samples Kruskal-Wallis)	14.472
DF	3
Sig.	.002**
* p<.05; ** p<.01; *** p<.0005	

Belg

	N	Mean	Median	Std. Dev.
<0.5 ha	46	.14	.00	.32
0.5 - 1.0 ha	123	.24	.00	.38
>1.0-2.0 ha	31	.39	.25	.42
>2.0 ha	30	.43	.39	.34

N	230
Test Statistic (Independent-Samples Kruskal-Wallis)	23.534
DF	3
Sig.	.000***
* p<.05; ** p<.01; *** p<.0005	

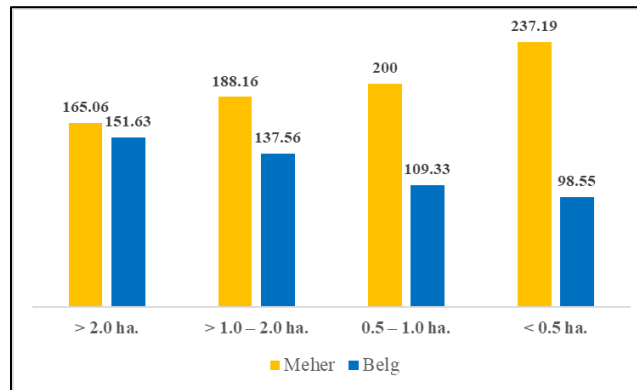
Oddly, the order of the mean ranks across areas of land cultivated are inverse across cropping seasons (Figure 5.2). Insofar as land area cultivated is an accurate proxy for socioeconomic status, the indication is that, during the Belg, wealthier households derived a relatively greater share of the overall seed they sowed from seed aid, compared to poorer

households. (Note: the Belg sample is also different than that of the Meher, which could potentially explain these differences.) During the Meher, the opposite is true. Poorer households derived a relatively greater share of the overall seed they sowed from seed aid, compared to wealthier households.

Significant pairwise differences between households' respective areas of land cultivated for the Meher were limited to those between < 0.5 ha and > 2.0 ha ($p = .002$) and between < 0.5 ha and $> 1.0 - 2.0$ ha ($p = .042$). These groups were also significant for the Belg (respectively, $p = .000$ and $p = .008$).²⁶ This confirms that the relative differences in mean ranks between the wealthiest and poorest households, inverse across seasons, is not simply due to chance. However, wealth is a relative concept in the context of the ESAR. Hypothetically at least, all seed aid recipients—even those cultivating two or more hectares of land—were identified as vulnerable smallholders in need of assistance. Thus, the fact that the wealthiest households in the ESAR derived relatively greater shares of the seed they sowed from seed aid during the Belg is statistically, but not substantively, significant.

²⁶ Additionally, the pairwise difference between 0.5 ha - 1.0 ha and > 2.0 ha was also significant ($p = .002$).

Figure 5.2
Mean Ranks of the Proportion of Seed Sown Derived from Seed Aid – by Land Area Cultivated



I estimate an OLS model to predict the share of seed sown derived from seed aid during the Meher using household size, age of household head, gender of household head, land area cultivated, and region. Overall, the model statistically significantly predicted the share of seed sown derived from seed aid, $F(9, 291) = 8.505, p = .000, \text{adj. } R^2 = .184$ (Figure 5.3).^{27,28} Substantively, then, the model accounts for approximately 18% of variation in our outcome variable, which is the share of seed sown derived from seed aid, transformed into quintiles.

²⁷ The outcome variable, the share of seed sown derived from seed aid, was transformed into quintiles because it violated the assumption of normality.

²⁸ The Meher model met the assumptions of normality, linearity, independence of residuals, homoscedasticity, non- multicollinearity, no outliers greater than +/- 3 standard deviations, and no leverage values greater than 0.2. A model was not run for the Belg season because these data, even when transformed, violated the assumption of normality.

Figure 5.3
OLS Model Predicting the Share of Seed Sown Derived from Seed Aid

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.456 ^a	.208	.184	1.25173	1.797

a. Predictors: (Constant), REG4, HHage, LAC3, HHsize, Gend, LAC4, REG3, REG2, LAC2
b. Dependent Variable: MhrSeedSrcdAidPropQntl

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Correlations			Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Zero-order	Partial	Part	Tolerance	VIF
1 (Constant)	4.469	.373		11.980	.000	3.735	5.203					
HHsize	-.022	.039	-.032	-.568	.571	-.099	.055	-.089	-.033	-.030	.868	1.152
HHage	-.007	.006	-.068	-1.243	.215	-.018	.004	-.110	-.073	-.065	.906	1.104
Gend	-.342	.194	-.097	-1.767	.078	-.723	.039	-.067	-.103	-.092	.905	1.105
LAC2	-.499	.194	-.180	-2.567	.011	-.881	-.116	-.023	-.149	-.134	.556	1.800
LAC3	-.443	.240	-.129	-1.843	.066	-.916	.030	-.061	-.107	-.096	.558	1.791
LAC4	-.817	.282	-.203	-2.898	.004	-1.371	-.262	-.139	-.167	-.151	.557	1.795
REG2	-.608	.215	-.191	-2.820	.005	-1.032	-.184	-.158	-.163	-.147	.594	1.684
REG3	-.993	.211	-.315	-4.718	.000	-1.408	-.579	-.261	-.267	-.246	.612	1.635
REG4	.422	.221	.129	1.911	.057	-.013	.857	.305	.111	.100	.597	1.675

a. Dependent Variable: MhrSeedSrcdAidPropQntl

However, the slope coefficients for household size (*HHSIZE*), age of household head (*HHAGE*), and gender of household head (*GEND*) were not statistically significant, so we can conclude their values were not different than zero in the population and thus that there exists no linear relationship between each of them and the outcome variable, respectively.

Land area cultivated variables were constructed in reference to *LAC1*, the smallest category, < 0.5 ha. *LAC2* refers to the 0.5 – 1.0 ha. category, *LAC3* to the > 1.0 – 2.0 ha. category, and *LAC4* to the > 2.0 ha category. Of these, only *LAC4* was significant ($\beta = -.203$, $p = .004$). Thus, compared to farmers cultivating < 0.5 ha, those cultivating > 2.0 ha derive significantly less of the seed they sow from seed aid, net of controls. Because the outcome variable (the share of seed sown derived from seed aid) has been transformed into quintiles, the β value for *LAC4*, $-.203$, should be interpreted substantively as approximately one-fifth of one quintile. Thus, smallholders who cultivated > 2.0 ha (*LAC4*) of land derived approximately one-fifth of one quintile less of seed sown from seed aid, compared to those who cultivated < 0.5 ha.

This is consistent with the earlier discussion about the mean ranks of land areas cultivated (Figure 5.2).

In terms of regions, variables were constructed in reference to *REG1*, which represents SNNPR. *REG2* refers to Oromia, *REG3* to Tigray, and *REG4* to Amhara. The coefficients for *REG2* and *REG3* were statistically significant ($\beta = -.191, p = .005$ and $\beta = -.315, p = .000$, respectively). Therefore, the amount of seed sown derived from seed aid was significantly lower in these regions, compared to SNNPR, net of controls. Again, because the outcome variable (the share of seed sown derived from seed aid) has been transformed into quintiles, the β values for *REG2* (-.191) and *REG3* (-.315) should be interpreted substantively as approximately one-fifth and one-third of one quintile, respectively. Thus, compared to those in SNNPR, smallholders in Oromia (*REG2*) derived approximately one-fifth of one quintile less of seed sown from seed aid. Smallholders in Tigray (*REG3*) derived approximately one-third of one quintile less of seed sown from seed aid, compared to those in SNNPR.

Despite the overall statistically significant fit of the OLS model, the majority (approximately 82%) of the variation in the outcome variable remains unexplained. However, the model does confirm the insignificance of a household's size as well its head's gender and age in predicting the share of seed aid in that household's sowing quantities. Although the outcome variable in question (the share of seed sown derived from seed aid) is not a direct measure of gender discrimination, this finding may provide support to the claim that women-headed households were not marginalized in the seed aid programs. That said, across various domains of Ethiopian smallholder agriculture, gender gaps are well-established, for example in access to extension (Mogues, 2013) and in productivity (Aguilar et al., 2014).

To recap the main findings for Research Question 2.2 (how the overall share of seed sown derived from seed aid differed among ESAR households), we observed differences across regions and across households cultivating differently-sized areas of land. Differences between households headed by different ages and by different genders were, respectively, insignificant. The OLS model I estimated confirmed the importance of region and the size of land area cultivated in predicting differences in the share of seed sown derived from seed aid.

Next, I analyze the household-level relationship between the amount of seed aid received and changes in sowing quantities (Research Question 2.3). Table 5.6 shows correlations between the quantity of seed aid received (at the household level) and the rate of change in sowing quantities (between the current given season and a previous “normal” baseline). The clearest message is that while there are some significant relationships for Meher 2016, there are none for Belg 2016. Within the time period of the Meher cropping season, however, three distinct statistical relationships—between seed aid received and changes in sowing quantities—are evident, as summarized in Table 5.7.

First, in some regions, no such relationships exist. This was the case in SNNPR and Oromia, where none of the seed aid crops distributed in each respective region were associated with significant changes in sowing quantities. Second, in the case of Tigray, only one major seed aid crop was distributed (teff), and it was associated with significant increases in sowing quantities, albeit weakly ($r = .311$, $p < 0.01$). Finally, in Amhara, some of the major seed aid crops distributed were associated with positive, significant increases in sowing quantities. This

was the case for wheat ($r = .657$, $p < 0.05$) and barley ($r = .487$, $p < 0.01$), where the relationships were both of moderate strength.²⁹

Table 5.6
Correlations Between Amount of Seed Aid Received and Household Changes in Sowing Quantities

Meher

	Total	SNNPR	Oromia	Tigray	Amhara
<i>All Seed Aid Crops</i>					
Listwise N	328	84	78	75	70
Pearson Correlation	-.010	.166	.164	.325**	.007
Sig. (2-tailed)	.852	.132	.152	.004	.951
<i>Major Seed Aid Crops</i>					
Wheat					
Listwise N	77	-	64	-	13
Pearson Correlation	-.170	-	.051	-	.657*
Sig. (2-tailed)	.138	-	.689	-	.015
Barley					
Listwise N	29	-	-	-	29
Pearson Correlation	.487**	-	-	-	.487**
Sig. (2-tailed)	.007	-	-	-	.007
Teff					
Listwise N	162	60	17	71	14
Pearson Correlation	.163*	.086	.025	.311**	.18
Sig. (2-tailed)	.038	.514	.924	.008	.538
Chickpea					
Listwise N	29	20	-	-	9
Pearson Correlation	.038	.079	-	-	-.006
Sig. (2-tailed)	.843	.741	-	-	.988

*Correlation is significant at the 0.05 level (2-tailed).

**Correlation is significant at the 0.01 level (2-tailed).

²⁹ Because barley was only distributed in Amhara, its correlation coefficient and significance level for Amhara are also reflected in the “Total” column.

Table 5.6
Correlations Between Amount of Seed Aid Received and Household Changes in Sowing Quantities (continued)

Belg

	Total	SNNPR	Oromia	Tigray	Amhara
<i>All Seed Aid Crops</i>					
Listwise N	89	69	-	10	10
Pearson Correlation	.030	.176	-	.359	-.313
Sig. (2-tailed)	.780	.148	-	.309	.379
<i>Maize</i>					
Listwise N	67	67	-	-	-
Pearson Correlation	.152	.152	-	-	-
Sig. (2-tailed)	.219	.219	-	-	-
<i>Teff</i>					
Listwise N	12	-	-	10	3
Pearson Correlation	.185	-	-	.408	.969
Sig. (2-tailed)	.564	-	-	.241	.159
<i>Haricot beans</i>					
Listwise N	5	5	-	-	-
Pearson Correlation	.656	.656	-	-	-
Sig. (2-tailed)	.229	.229	-	-	-

*Correlation is significant at the 0.05 level (2-tailed).

**Correlation is significant at the 0.01 level (2-tailed).

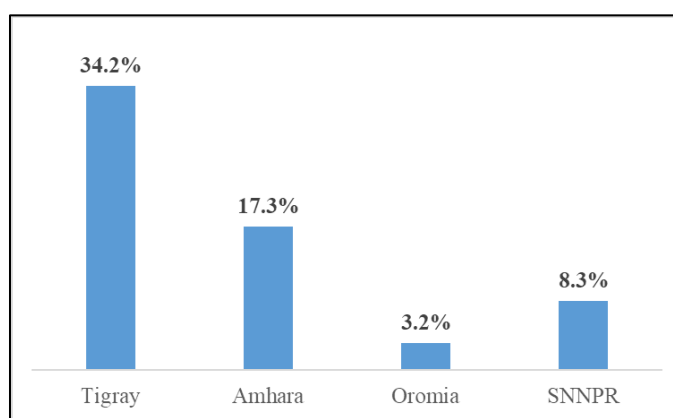
Table 5.7
Correlations Between Amount of Seed Aid Received and Household Changes in Sowing Quantities – Meher 2016

	SNNPR	Oromia	Tigray	Amhara
Wheat	--	*	--	**
Barley	--	--	--	**
Teff	*	*	**	*
Chickpea	*	--	--	*
-- = Not distributed; * = Distributed but not significant; ** = Distributed and significant				

The principal message of Tables 5.6 and 5.7 is that the way aid recipients use seed aid—specifically in terms of sowing rates—depends on the crop and on the region. Only in the northern, neighboring regions of Tigray and Amhara were the relationships between seed aid received and changes in sowing quantities found to be both positive and significant. This is likely because rainfall patterns here were more favorable during the Meher 2016 rainy season than they

were in Oromia and SNNPR. Figure 5.4 supports this claim. Good weather accounted for a much higher share of the reasons provided for sowing more than normal in Tigray and Amhara, relative to those in Oromia and SNNPR. This stands to reason. There is more of an incentive for a farmer to increase their sowing quantities if s/he anticipates good weather.

Figure 5.4
Among Reasons Given for Sowing More Than Normal, Percent Indicating “Good Weather/Rainfall”



Regional differences in rainfall patterns illustrates how context matters, and that contexts are nuanced not just by regions but by crops within regions. For instance, while the relationship between seed aid and sowing quantities was only found to be significant in the northern regions of Tigray and Amhara, not all crops therein were significant. This is at least partly because crops (and varieties) have different agronomic needs. As such, they are affected differentially by drought. And according to ESAR participants, in drought conditions, crops/varieties that are more susceptible to drought will be de-prioritized by farmers; crops/varieties that are more resistant to drought will be prioritized. Farmers in each region affirmed this for different crops during community meetings. For example, both teff in SNNPR and wheat in Oromia were said to be of decreasing importance on account of their susceptibility to drought. Perhaps it is

unsurprising, then, that in neither of those two cases was the relationship between seed aid and the rate of change in sowing quantities found to be significant.

Of course, many factors shape farmers' decisions about what crops to plant (and in what quantities) vis-à-vis climate change (see, for instance, Wood et al., 2014). The point of this discussion on context is to demonstrate that the relationship between seed aid and the rate of change in sowing quantities shifts with expectations about weather patterns.

Seed Aid and New Seed Varieties

The previous two sections examined quantitative relationships between households in the ESAR sample in terms of seed aid uses (Research Question 2.1) and sowing dynamics (Research Questions 2.2 – 2.3), against a set of stated expectations. In this section and the next, I take an exploratory approach to analyzing two other aspects of the ESAR: the role of seed aid in accessing new varieties (Research Question 2.4), and farmers' open-ended appraisals of seed aid (Research Question 2.5).

Modern, improved and certified varieties of seed in Ethiopia are notoriously difficult to obtain. On the supply-side, the Ethiopian Seed Enterprise, a parastatal entity, faces several challenges.

...production and distribution of improved seed has been stagnant since about 2000. At about this same time, the supply of improved seed channeled through the regional extension and input supply system began to fall short of official estimates of demand (with a 72 percent shortfall in 2008 for the five major cereals). Limited production capacity at the ESE for certified seed, combined with insufficient provision of breeder and pre-basic seed from the research system, contributes much to these shortfalls. (Spielman, Mekonnen, and Alemu, 2012, p. 94)

At the same time, demand for improved and certified varieties of seed was widespread in the study regions. 62% of farmers said they would buy improved/certified seed next season, were there to be no seed aid. The promise of increased productivity from modern varieties drives this demand (Table 5.8). The local unavailability of improved varieties also results in farmers looking to seed aid distributions for new germplasm. However, nearly a third of respondents were not interested in modern varieties, primarily on account of their cost.

Table 5.8
Reasons Farmers Gave for Wanting or Not Wanting Improved Varieties

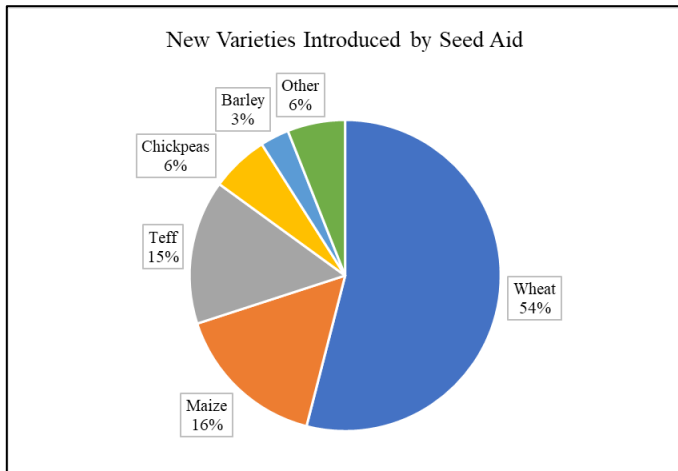
Reasons for wanting improved varieties	Reasons for not wanting improved varieties
<p>1. Increases productivity</p> <ul style="list-style-type: none"> • “It increases productivity double time.” • “Because I know it increases my productivity.” • “To increase the yield.” • “It gives more yield.” • “Because improved seed increases productivity.” • “The yield is good.” • “To get good product.” • “It is more productive.” • “Because it is better than the local seed.” • “Because it is good [sic] from the local seed.” • “Although it is expensive, it is more productive than ordinary seed.” • “Because it is necessary to produce more.” • “To get enough yield.” • “Although it is expensive, it is more productive.” than the local seed.” 	<p>1. Too expensive</p> <ul style="list-style-type: none"> • “I don’t have enough assets to buy improved seed.” • “I have no money.” • “I am poor and do not know my future.” • “I used my own stock.” • “I do not have financial capacity.” • “Because certified seed is expensive.” • “Certified seed is very expensive.” • “Because of poverty.”
<p>2. Locally unavailable</p> <ul style="list-style-type: none"> • “It is not found in our kebele.” • “It is not found in our area.” • “We don’t get certified seed around here.” • “Because we have no shops in our area for certified seed.” 	<p>2. Don’t know how to use it</p> <ul style="list-style-type: none"> • “Because I don’t know about it and nobody taught me.”

The ESAR data indicate seed aid has introduced 33% of households to new varieties, 86% of which were accessed in either 2015 or 2016. Among this 33%, nearly all of these new varieties (93%) are still being used. While the variety introductions are quite recent, the high

proportion of households continuing use of the new varieties they received is indicative of the quest for higher yields.

Figure 5.3 summarizes the varieties introduced by seed aid, by crop and by variety name. The crops represented here are principally cereals, with wheat being the most dominant (54% of all new varieties introduced), followed by maize (16%) and teff (15%). This is unsurprising, since these crops represent principal seed aid crops distributed during Meher 2016 and Belg 2016 (and conceivably in previous years' distributions, as well).

Figure 5.5
Varieties Introduced through Seed Aid, by Crop and by Variety Name



<i>Wheat</i>	<i>Teff</i>
Bafanii	Adaa
Bafanol	Cross 37
Baqona	Federal
Barna	Global
Batu	Kinche
C1	Limatii
Chebere	Magne
China	New white
Dekeba	
Galemo	<i>Maize</i>
Galmoma	BH 140
Golocho	BH 540
Kakaba	
Kubisa	
Ogolcho	
Ogolchoo	
Ogoliche	
Paven	
Peka flour	
Qaqaba	
Qoqaba	
Qubsa	
Sifan	

Farmers' Appraisals of Seed Aid

In the final empirical section of this chapter, I present themes in, and interpretations of, farmers' appraisals of the seed aid programs of 2016 (Research Question 2.5), drawing on unstructured qualitative feedback provided by ESAR respondents.

Varietal adaptation and performance. Twenty-six respondents commented on the inappropriateness of varieties distributed during the seed aid programs. These comments centered on adaptation. For example, a number of farmers said the varieties they received were not adequately adapted to their local agroecologies. "The maize type we received is not appropriate for our environment," remarked one farmer. "The [Pioneer variety] is not good for us. Please change. We ask again and again," said another. A third said, "The seed aid in general is very helpful but the variety should be changed because it is not suitable for the soil condition." Another's need was for a drought-resistant variety: "It is better if we get seed aid on wheat because it is drought-resistant."

A focus on adaptation is consistent with research from northern Ethiopia, where three-quarters of smallholders in a sample of 384 indicated growing traditional varieties of crops is 'inevitable,' since these landraces have historically been better adapted to harsh local conditions (Wale, 2011). However, unstable and erratic rainfall has driven some farmers in the eastern, south-eastern, and central highlands of Ethiopia to substitute modern, early-maturing varieties for landraces (Teklu and Hammer, 2006).

As we saw in the previous section, new varieties are also often believed to increase productivity. As such, where issues of the 'correct' variety are concerned, perceptions of poor adaptation co-mingle with beliefs that certain new varieties offer better yields. This explains why one farmer said, "I like the seed aid and it helps us. If you can we need new variety of teff because I have [the] local variety." Likewise, another remarked, "The aid is good and it helps us

but we need other variety like maize and wheat.” A third said, “Our farm need always new variety of seed to yield more.” A fourth said, “If we get a good variety seed it will increase productivity and support to improve the livelihood of the local farmers.” The quest for higher yields has been shown to drive the displacement of landrace varieties elsewhere in Ethiopia (Teklu and Hammer, 2006).

Farmers’ co-mingled perceptions about the adaptation and performance of germplasm reflect the complexity of agricultural livelihood strategies. Farmers have different needs and often multiple needs. Sometimes, resilient landraces are preferred. Other times, it is high-yielding modern varieties farmers that are desired. This underscores the need for seed systems that integrate formal and informal channels in order to meet farmers’ dynamic, evolving needs, especially in the face of climate-induced stresses (Kansiime and Mastenbroek, 2016).

Quantities and timing. Eighteen farmers issued a unanimous complaint about the amount of aid they received: it was not enough. At least in some cases, this was an issue of meeting minimum sowing requirements. “Seed aid is too small to cover my land,” as one farmer put it. “I am happy by the availability of seed aid,” said another. “But I become happy if seed aid is provided more seed that enable us to sow all our lands.” A third respondent said, “If the seed aid is given it should be enough amount.”

Qualitative remarks—16 of them—reveal nearly unanimous dissatisfaction with the timeliness of the deliveries. Because the entirety of farmers in the sample rely on rain, rather than irrigation, for their farms, not receiving seed aid before the seasonal rains begin is obviously problematic. One farmer’s comment summarizes the complaints: “It’s better that the seed aid will be given to us before farming time.” Another said, “The seed is not distributed to us on time. This is a serious problem for our farm work.” Though NGOs who work with smallholders are

well-aware of the time-sensitive nature of emergency seed programs, the comments underscore the need for robust partnerships with systems [e.g., CHIRPS (Climate Hazards Group InfraRed Precipitation with Stations)] and institutions (e.g., the Famine Early Warning System Network) that monitor droughts, in order to enable timely responses (Bayissa et al., 2017). As rainfall becomes more erratic with climate change, this is even more crucial.

Weather and climate. Farmers' own perceptions of weather and climate change were complex. Several farmers felt weather/climate changes mitigated the otherwise helpful effects of seed aid. "The shortage of rainfall created a serious bad effect on the production of wheat and it hides the benefit of seed aid," said one recipient. Others felt weather/climate changes shifted farmers' needs to other inputs and other seed varieties. "The only problem we face [here] is not seed it is the weather condition or no rain. So, we need irrigation rather [than] seed aid," explained one farmer." Another said, "The seed aid distributed is not climate-resilient please provide us with climate-resilient variety." Finally, some participants saw shifts in weather/climate (i.e., droughts) as the reason seed aid programs should continue. As one put it, "The aid should be sustainable until we stand on [our own two] legs because the weather condition of our woredas is too bad."

As evidenced here, smallholders are cognizant of climate change. Their perceptions of rainfall patterns have been shown to correspond with the local meteorological record, even if their anticipation of future climatic conditions has been shown to be less consistent with climate model projections (Habtemariam et al., 2016). Better knowledge of expected climate scenarios could be a source of greater resilience for smallholders and the farming systems in which they are embedded.

Additional forms of aid. Another set of comments suggested seed aid was necessary but insufficient for coping with the droughts of 2016. Additional forms of aid were also necessary. “We would like to thank [the MNGO] for providing us seed aid when we are in problem. We would also [like] to get oxen in the form of aid,” said one. Another said, “It’s better to give us fertilizer with seed aid.” Other inputs requested by participants included pesticides, fertilizer, livestock, chickens. Still other types of aid included irrigation infrastructure, credit “for other farm works,” and food aid. The scope of these requests raises the question of aid dependence.

Dependence and independence. Comments reflecting dependence on, and gratitude for, seed aid were by far the most numerous (52 in total). The sentiment that seed aid is good and should continue represents most of the feedback provided. Farmers seemed less concerned about where the seed should come from: a few cited NGOs, others the government, but most no specific source. Ironically, at least six responses used forms of the term ‘sustainability’ in their remarks. “Since the area is drought-prone, the aid should be sustainable,” said one. “The seed aid is good for us [to] continue like this. It helps us not rent our land and for sustained life,” said another.

Despite the fact that the consent process included an explanation of the ESAR team’s technical independence from the institutions who actually distributed the seed aid, a number of participants also expressed appreciation for the seed aid. No thanks were rendered to the government, but rather to NGOs and other organizations involved in the distributions. Also, one-third of these 11 comments were not strictly thanks, but thanks followed by advice. “I want to thank for the seed aid and it helps me but it is better to give us on Belg because the weather condition is good on Belg rather [than] on Meher,” as one farmer put it. Another said, “I would

like to thank seed providers and I would suggest that the seed aid should include different seed types and variety.”

At the same time, a much smaller number of responses expressed concern about dependency. As one recipient eloquently put it, “I think it is not good to provide continuous aid because people will expect and wait for the aid every year. It is more better [sic] to create the way to be independent and provide the change for those who didn’t [get] the opportunity before.” Three other farmers even used the term ‘dependency’ in their complaints. However, despite these comments and the more general belief that aid induces dependence, Little (2008) found no evidence of dependency-like behaviors among food aid recipients in Northeastern Ethiopia. As he points out, “Few farmers would be foolhardy enough to depend on food aid in rural Ethiopia since its delivery is non-transparent, uncertain, poorly timed, and the amounts insufficient” (p. 870).

Discussion

This chapter has explored five questions (Research Questions 2.1 – 2.5) pertaining to the recipients of seed aid. Here, I discuss some of these findings, focusing on what I see as meaningful contributions to our understanding of seed aid policy and research.

First, these statistical tests confirm households used seed aid differently in some ways, but not all. Consistent with my expectations, seed aid use tended to vary significantly by region. As I suggested earlier, however, it is likely that regional differences suppress a composite of factors that influence seed aid use, for example the timing and sowing densities of each region’s seed aid crop profiles. Further seed aid research should include the collection of information that provides the potential for greater insight into the nature of regional differences (see Chapter 7).

Regional differences in the overall share of seed sown at the household level derived from seed aid were also statistically significant. Here, too, it is unclear whether the magnitudes of these differences were meaningful, just as it is unclear what the nature of these regional differences is. To stress the point, regional differences are a black box that need to be understood, as established by these findings.

Second, seed aid uses did not vary by socioeconomic status. Relatively poorer and relatively wealthier households used seed aid in similar ways. This kind of use homogeneity was also true between female- and male-headed households, demonstrating that, despite the silent, under-documented roles Ethiopian women play in the management of plant genetic resources generally, female-headed households pursue seed aid allocation strategies commensurate to those headed by males (Ogato, Boon and Subramani, 2009; Tsegaye, 1997).

Third, seed aid uses also varied significantly by type of seed aid, especially in terms of the share of seed aid planted. As discussed earlier, the relatively low mean ranks of common bean and chickpea suggest that seed aid will sometimes be treated as food. This is important because seed aid recipients are often also recipients of food aid. Preserving the intended use of seed aid—ensuring farmers plant it—partly depends on what crops are distributed.

Fourth, the receipt of seed aid does not necessarily result in increased sowing rates at the household level. In select cases where there was a significant, positive correlation between the quantity of seed aid received and changes in sowing rates (e.g., teff in Tigray, wheat and barley in Amhara), it was at least partly because farmers judged prevailing climatic conditions to be conducive to that end.

Fifth, in terms of the agricultural livelihood strategies farmers want seed aid to address, both productivity and yield performance emerged as key goals. Taking a demand-driven

approach, aid practitioners should provide beneficiaries with both resilient, locally-adapted landraces and fast-maturing improved varieties, ideally making it possible for farmers to choose from a suite of such options. Local voucher-based seed fairs are one creative mechanism that enables farmers to choose seeds according to their specific needs (Davis, Keane, & Sperling, 2017).

Finally, from the perspective of my theoretical framework, livelihood choices about how to use seed aid and which crops/varieties are most desirable reflect the pursuit to meet needs despite constraints and trade-offs (Long, 2001). Despite GOE's interest in raising smallholder yields through input intensification (see next chapter), smallholders consistently illustrated how livelihood choices are much more nuanced. Seed varieties with good yields are important, even desirable, according to ESAR participants, but so are resilient varieties that are well-adapted to local agroecological conditions. The receipt of seed aid is associated with an increase in household sowing rates, but only for certain crops in certain regions. Seed aid was widely appreciated by beneficiaries, but also criticized for its lack of procedural transparency. These dynamics illustrate the irreducible complexity farmers weigh in the efficacious utilization of aid.

Chapter Summary

In this chapter, I discussed the ways seed aid recipients used seed aid. Significant differences were observed in the regional distributions of the share of seed aid planted, eaten, and stored during the Meher, respectively speaking. At the same time, seed aid uses were not different across different demographic indicators such as gender of household head, age of household head, and amount of land area cultivated by the household. The chapter also analyzed the relationship between seed aid and household sowing dynamics. The share of seed sown at the household level derived from seed aid also differed significantly by region. An OLS regression model statistically significantly predicted the share of seed sown derived from seed aid ($R^2 =$

.184). However, correlation tests show that the relationship between the quantity of seed aid received and a positive increase in sowing rates is only significant in some scenarios (for certain crops in certain regions). Qualitative feedback from respondents revealed a range of perceptions about new crops and varieties received from seed aid, and about the appropriateness, timeliness, and quantities of seed aid received. Farmers use seed aid to meet their livelihood needs, but the strategies according to which they utilize it are complex.

Chapter 6

How the State Uses Seed Aid

Overview

Drawing on quantitative and qualitative data from the ESAR, as well as from field notes recorded during its implementation, this chapter examines the way the Government of Ethiopia uses seed aid programs for its developmental aspirations. In doing so, it considers the aid beneficiaries' perceptions of, and responses to, these actions. Accordingly, Research Question 3.1 sets up the analysis.

Research Question 3.1: By what means does the Ethiopian developmental state leverage seed aid programs?

Research Question 3.2: What ends does the Ethiopian state's utilization of aid serve?

My rationale is that seed aid programs are not implemented in a political vacuum, since agrarian development in the countryside is omnipresent, as Long (2001) has suggested. Indeed, the argument of this chapter is that seed aid programs are appropriated by the state into long-standing projects through mechanisms of surveillance, conditionality, and selectivity. So instrumentalized, seed aid serves these projects: one centered on economic growth, which in turn serves another, that of political control (Berhanu, 2012). The discussion at the end of the chapter presents this argument using Long's (2001) theories of planned intervention and actor strategies.

Surveillance

In November 2017, the *New York Times* published a story entitled, “‘We are Everywhere’: How Ethiopia Became a Land of Prying Eyes.” Excerpted here, the piece was widely shared across human rights blogs and newspapers throughout the African continent. It publicized the use of state surveillance in Ethiopia.

FENDIKA, Ethiopia — When he is away from his fields, Takele Alene, a farmer in northern Ethiopia, spends a lot of his time prying into the personal and political affairs of his neighbors. He knows who pays taxes on time, who has debts and who is embroiled in a land dispute. He also keeps a sharp lookout for thieves, delinquents and indolent workers. But he isn't the village busybody, snooping of his own accord. Mr. Alene is a government official whose job includes elements of both informant and enforcer. He is responsible for keeping the authorities briefed on potential rabble-rousers and cracking down on rule breakers. Even in a far-flung hamlet like Fendika, few of whose 400 or so residents venture to the nearest city, let alone ever travel hundreds of miles away to the capital, Addis Ababa, the government is omnipresent. In this case, its presence is felt in the form of Mr. Alene, a short, wiry man wearing a turquoise turban and plastic sandals. As a village leader, he said, his duties include serving as judge, tax collector, legal scribe for the illiterate and general keeper of the peace.... In a country whose rugged landscape is larger in area than France and Germany combined, Ethiopia's ruling party — which, with its allies, controls every seat in Parliament — relies on a vast network of millions of party members like Mr. Alene as useful agents and sources of information, according to current and former government officials and academics who study the country. (Freytas-Tamura, 2017)

Our experience during the ESAR resonates with those of Freytas-Tamura. For example, at the end of a day of ESAR fieldwork in Tigray, I was waiting under a tree for the enumerators to return along with our team's drivers. A group of children walked up. I noticed several of them were wearing TOMS shoes. A popular manufacturer based in the United States, TOMS says that for every pair of shoes it sells, it gives away a pair to a child in the developing world. Here were

a few apparent recipients of the “one for one” model. Using a translator, I asked one of the children, a girl about 10 years old, if she liked her shoes, how often she wore them, etc.

Discreetly, I took a picture of her shoes. The children moved along. Several days later, in a different kebele 50 kilometers away, I was approached by a woreda (county) administrator. She asked who we were, and whether we were planning to give TOMS shoes away. If so, she said, we are going to need to inform the government and obtain their permission. A colleague of mine showed her the clearance we had obtained from the federal and regional governments for the ESAR, and she left.

During another day of fieldwork in Tigray, the team was facilitating a kebele community meeting under a large tree in the middle of town. Two women and nine men were in attendance. The purpose of the meeting was to gain a general perspective on the farming system in the area, especially in terms of livelihoods. The facilitator was asking questions about what crops were most important for food security and income (respectively). Participants were responding freely. The tone was focused but relaxed and congenial. Then the kebele’s manager walked up. The man, who was middle-aged and well-dressed, carried a very large notebook with him. Immediately, the mood of the group became tense. Subsequent questions—about agricultural opportunities and challenges—yielded almost no response at first. The group seemed to adjust to the presence of the manager as the meeting went on, gradually speaking up a bit more. When the ESAR team thanked the group, concluded the meeting, and walked off, the kebele manager took our seat at the front of the group and addressed the town residents for several minutes.

Beyond these episodic encounters of surveillance, the ESAR team also experienced systematic monitoring by local government in each of the four study regions. For instance, in each woreda we visited, it was the protocol of the ESAR team to first visit the woreda

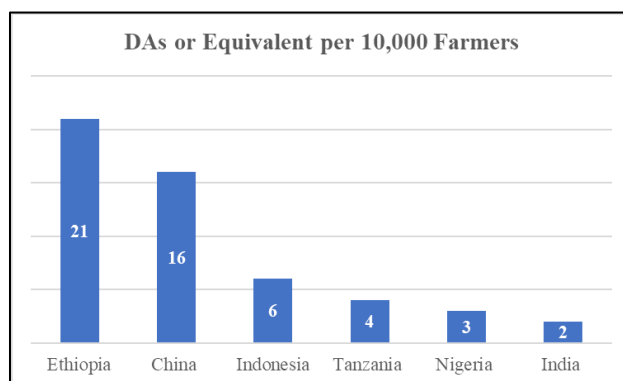
administration officials. We explained the purpose of the research and shared our paperwork from the Ministry of Agriculture granting us permission to conduct it. In every instance, the officials were formal and polite. They appointed 1-3 individuals, some of whom were DAs, to ‘assist’ us on our fieldwork in the woreda’s various kebeles selected for study. When the ESAR team divided into groups for surveying each kebele, the individuals would typically follow the groups with white people. They tended to be quiet, friendly, and alert. During interviews, it was not uncommon for these individuals to try and redirect answer provided by participants, such that it became necessary to insist upon hearing only from farmers. Even then, some farmers appeared reticent to fully participate in the questionnaires.

The incursion of the Ethiopian state into rural places is not a new development, albeit under the EPRDF, the extent of its reach has increased considerably (Bevan, 2010; Emmenegger, 2016; Pausewang, Tronvoll, and Aalen, 2002).

...the military government extended the control of the state far more than its predecessor, but...the intrusive power of the state under EPRDF has surpassed even that of the military government for several reasons, including replacement of grassroots administrations and associated structures by cabinets, councils, and administrative managers, the deployment of party functionaries and cells in every village and neighborhood, and the considerable increase in the number of development agents deployed. The presence of extension workers [DAs] in every rural community, working in tandem with farmers graduating from FTCs, and grassroots administrative and party structures spread over villages and neighborhoods of rural Ethiopia, make scrutiny and control of activities down to the household level increasingly complete. (Berhanu and Poulton, 2014, p. 209)

GOE estimates that approximately 45,000 DAs are currently deployed to Farmer Training Centers, although its plan is to scale this number to 60,000. This would make Ethiopia’s farmer-extension agent ratio one of the lowest in the world (Davis et al. 2010). Figure 6.1 illustrates the significant investments GOE is making in its extension system. This intent to scale is likewise reflected in GOE’s intention to increase the total number of “agricultural extension beneficiaries” from 13,950,000 in 2014/15 to 18,237,000 by 2019/20, a 30% increase (National Planning Commission, 2016). This is consonant with Bechewe et al. (2018), who estimate the number of smallholders utilizing extension services tripled from 3.6 million in 2004/05 to 10.9 million in 2013/14, an increase from 33% to 71% of all smallholders.

Figure 6.1
Extension Investment in Ethiopia Compared to Other Countries



	Ethiopia	China	Indonesia	Tanzania	Nigeria	India
Total number of DAs (thousands)	60	800	30	7	5	60
Farmers per DA	476	625	1,667	2,500	3,333	5,000

Source: Adapted from Davis et al. (2010)

Some have noted the ironic expansion of state control under the aegis of decentralization, as EPRDF sought to break with the country’s centralist and authoritarian history by devolving administrative tasks from federal and regional levels to district and kebele levels. The changes

indicated by Berhanu and Poulton (2014) above are “clearly driven by an expansion of bureaucratic structures of control,” as Emmenegger, Keno and Hagmann (2011, p. 734) put it. Tightly monitoring all institutional processes—including those of seed aid distributions—serves a political end, one of self-preservation, as I will suggest later in the chapter.

Conditionality

A second way GOE exerted influence on the seed aid programs of 2016 was by conditioning them. The ostensible selection criteria for seed aid recipients varied across the ESAR’s study regions but were conceptually similar. Table 6.1 provides illustrative examples of the selection criteria used for the selection of beneficiaries as reported by government officials and DAs. The criteria target the vulnerable, as indicated by small amounts of assets (chickens, oxen), previous participation in GOE’s social safety net program, and labor-deficiency (female-headed households). Additionally, the criteria rule out those without land, or those who may have land but no ability to cultivate it. Theoretically, these criteria derive from those stipulated by the MNGO’s implementation guidelines and focus on vulnerable households affected by the 2016 droughts (Chapter 4).

Table 6.1
Illustrative Selection Criteria for Seed Aid Recipients – by Region

SNNPR	Oromia	Tigray	Amhara
<ul style="list-style-type: none"> • People who have no money to purchase seed • People who are affected by drought (who lost harvest) • People who did not get seed during first distribution • Must have land and be able to prepare it for cultivation 	<ul style="list-style-type: none"> • Participants in social safety net program • ‘Poorest of the poor’ – i.e., those without livestock and chickens, followed by those with chickens and no livestock, and so on • Drought victims • Female-headed households 	<ul style="list-style-type: none"> • Poorest of the poor • Asset ownership • Participants in social safety net program • Land must be ploughed 	<ul style="list-style-type: none"> • Those affected by drought • Poorest of the poor (as indicated by ownership of oxen/chickens) • Graduate of the social safety net program • Female-headed household

Note: Within each study region, every woreda developed their own set of selection criteria. Those presented here are examples from each region.

In fact, accessing seed aid was very often conditioned upon the purchase and/or use of fertilizer and other inputs. For instance, in SNNPR, seed aid recipients repeatedly told us about the conditions attached to seed aid distributions by woreda and kebele officials. The conditions included purchasing fertilizer and implementing agronomic practices like sowing in lines and weeding regularly. However, the specific conditions shifted by crop. Maize required the “full package”—fertilizer, sowing in lines, weeding. The same went for teff. Chickpea and haricot (common bean) required only the use of diammonium phosphate (DAP), a fertilizer. In Amhara, seed aid was conditioned upon the use of fertilizer for teff and wheat, which were improved varieties. The condition did not apply to chickpea, which was a local variety. Conditionality in Tigray was more ambiguous, but possibly more draconian. Two of the ESAR’s enumerators were told by farmers that if you do not buy fertilizer, the government may withhold seed aid or even food aid. In Oromia, the development agents (DAs) who were interviewed claimed farmers could access seed aid without fertilizer.

Purchasing fertilizer in order to access seed aid is a lose-lose scenario. On the one hand, refusing fertilizer can often mean refusing seed that is badly needed. On the other, purchasing fertilizer often required taking out a line of credit. Credit exposes farmers to risk. If their crops fail, they may be unable to repay the loan. What is more, the terms of the loan are often ambiguous, such that farmers are not even aware of its final cost (Planel, 2014) This explains many farmers’ aversion to purchasing fertilizer on credit, both within the context of the ESAR and among Ethiopian smallholders generally (Berhanu, 2012; Carlsson, et al., 2005; Alemayehu, Beuving, and Ruben, 2018). As one farmer in SNNPR put it, “It is a gamble. If it rains, I can pay back the credit. If it is a drought, I lose my assets.” Another cited the strict default penalties

imposed by local government lenders. “I took credit at a 100% interest rate from a friend so I did not have to take credit from the government,” he explained. “The government will take away my house if I do not repay, unlike my friend. The seed aid is good for us, but the woreda and kebele government people are not good.” A third said, “Seed aid is good for us, but the government of us is not good for us because they don’t support inputs like fertilizer and oxen.”

Fertilizer applications among seed aid recipients were, nonetheless, widespread. This is consistent with previous findings on fertilizer uptake among Ethiopian smallholders generally (Spielman, Mekonnen, and Alemu, 2012). For the Meher 2016 cropping season, 67% (213 of 320) of seed aid recipients indicated they used fertilizer. Across the study regions, the majority of this seed aid was sourced from the government but financed by household savings or by the sale of livestock (Table 6.2). A very small proportion of farmers accessed government financing to pay for fertilizer.

Table 6.2
Fertilizer Sources and Financing for Meher 2016 Cropping Season

	Total		SNNPR		Oromia		Tigray		Amhara	
	N	%	n	%	n	%	n	%	n	%
Fertilizer sources*	202		-	-	87	-	52		63	
Government	122	60	-	-	46	53	32	62	44	70
Friend/neighbor/relative	14	7	-	-	3	3	11	21	0	0
Agro-market	19	9	-	-	18	21	1	2	0	0
Cooperatives/unions	30	15	-	-	12	14	8	15	10	16
Research centers	2	1	-	-	2	2	0	0	0	0
Public markets	15	7	-	-	6	7	0	0	9	14
<i>*Among those who shared their fertilizer source</i>										
	Total		SNNPR		Oromia		Tigray		Amhara	
	N	%	n	%	n	%	n	%	n	%
Source of payment for fertilizer	223		33		85		50		62	
Took credit from the government	11	5	2	6	5	6	4	8	0	0
Saved funds	132	57	24	73	31	37	39	78	38	61
Friend/neighbor/relative	19	8	3	9	5	6	4	8	7	11
Sold livestock	47	20	2	6	29	34	3	6	13	21
Sold or leased agricultural products	14	6	2	6	9	11	0	0	3	5

Table 6.3 presents further data on farmers' views on fertilizer. Given fertilizer's complexities to seed aid, the ESAR asked farmers, "If there is no seed aid next season, would you buy fertilizer yourself?" 67% of households (214 of 320) said yes—the same proportion who used fertilizer for the Meher 2016—while 30% (94) said no and 3% (10) were unsure. Within this context, the overwhelming reason for wanting to buy fertilizer was a perception that fertilizer increases productivity and, hence, yields. Notably, a handful of farmers explained that buying fertilizer was a requirement of the government. Most of those who said they would not buy fertilizer could not afford it. A smaller share felt fertilizer was not helpful or suited to their farming operations.³⁰

³⁰ As Chapter 3 notes, the section including questions about fertilizer was added near the end the fieldwork was conducted in SNNPR, so the data presented in Table 6.2 and Table 6.3 do not include this region, with the exception of the second section of Table 6.2, which was implemented partially in SNNPR.

Table 6.3

Reasons Farmers Gave for Wanting or Not Wanting to Buy Fertilizer Next Season if There Was No Seed Aid

Reasons for wanting fertilizer next season if there was no seed aid	Reasons for not wanting fertilizer next season if there was no seed aid
<p>1. Increases productivity</p> <ul style="list-style-type: none"> • “Without fertilizer the land is not productive.” • “Without fertilizer it’s impossible to get production.” • “To increase productivity and change my family income.” • “To increase fertility of the land.” • “To get more production and good yield.” • “The land is not productive without fertilizer.” • “It makes plants grow fast and help to give more yield.” • “It is a ‘must’ to buy fertilizer.” • “I cannot cultivate without fertilizer.” • “Fertilizer is important whether seed aid is available or not.” • “Fertilizer is good for crop development.” • “Because without fertilizer the land is not productive.” • “Because the land needs it.” • “Because my life depends on agriculture, so I want more production.” 	<p>1. Can’t afford it</p> <ul style="list-style-type: none"> • “I have no money.” • “Because it is very expensive.” • “Because it is costly.”
<p>2. Government forces its use</p> <ul style="list-style-type: none"> • “The government forced us to use fertilizer.” • “Because the government forced us to buy.” • “Because it is mandatory to use.” 	<p>2. It is not helpful</p> <ul style="list-style-type: none"> • “The land <u>do</u> not require.” • “My land need not fertilizer.” • “I didn’t observe the difference in using fertilizer and sowing without fertilizer.” • “Fertilizer is not suitable for my land.” • “Because fertilizer is not important for my farmland. It decreases productivity.”

Note: Quotations are presented to represent qualitative diversity rather than incidence. The statements shown in each of the four boxes were often repeated, so the number of statements in each box is not a reflection of their incidence. For instance, as noted above, most farmers who said they would not buy fertilizer explained it was because they could not afford it. The three quotations representing this explanation illustrate the (limited) range of ways farmers stated the issue.

In sum, farmers in the ESAR sample reflect a widespread belief in the productive potential of inorganic fertilizers, a perspective that (perhaps strategically) accommodates the

requirements of GOE’s productivist vision for smallholder agricultural development. These requirements—“the continued imposition of targets from above”—condition access to seed aid so as to stabilize and advance macroeconomic growth, even in the face of disasters, such as the droughts of 2016 (Spielman, Mekonnen, and Alemu, 2012, p. 114). Later, I trace these requirements and targets to their origin.

Selectivity

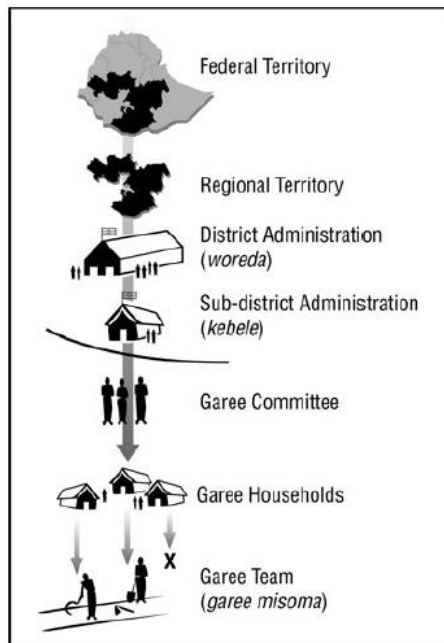
Finally, it was also apparent seed aid was selectively distributed. Complaints about selectivity were by far the most direct critique of the seed aid distributions of 2016 (Table 6.4). The aid processes were seen as corrupt, unfair, nepotistic, unnecessarily bureaucratic, discriminatory, partial, poorly governed, lacking transparency, and failing to reach the poor. These critiques were levied almost entirely at the government, particularly at kebele-level administrations. One response blamed the corruption on the seed distribution committee. NGOs and other involved organizations were not blamed. “The seed aid distribution is unfair and the kebele people provide to their relatives,” as one recipient summarized it. Here, I explain how seed aid beneficiaries are selected. Doing so helps us understand the specific mechanisms by which households are included or excluded in seed distributions, and why.

Table 6.4
Views on Seed Aid – Selectivity

"The seed aid should include all the farmers in need"
"The seed aid distribution is unfair and the kebele people provide to their relative"
"The government send us seed aid but the kebele people do not give us to the right way, that means discrimination by the kebele people"
"Please control kebele level government to distribute fairly"
"For the next year to give us seed aid the government must control the seed aid"
"All the time exopt this year seed aid and food aid was not given for me because, of the workers in the kebele are not free from corruption..."
"The seed distribution is not fair and transparent..."
"The seed distribution committee didn't distribute the seed aid fairly. They unfairly provide for few two types of seed crops but not for others"
The seed aid should be distributed equally among farmers"
"The seed aid should be directly distributed by NGOs because the government body impose unnecessary buearucracy"
"The seed aid should be directly distributed by NGOs because the government body impose unnecessary bureuacracy"
"The seed aid is good but the impartiality between farmers should be solved"
"The kebele adminstration make some cheating during seed aid distribution"
"Giving seed aid to the poor should be initated. The seed aid providers should make cross check whether it reached to the targeted group or not"
"We need the seed aid because it helps us but there is coruption during the distribution"
"We need the seed aid because it helps us but there is coruption during the distribution"
"There were problems during seed aid distribution. It gave no attention for the poor"
"There was a problem of good governance during seed aid distribution"
"The distribution of seed aid was not correct because it didn't reach to the poor"
"The kebele officials use seed aid for themselves and their relatives by ignoring the poor farmers. Generally the distribution was unfair"

Smallholders throughout Ethiopia typically belong to a so-called development network (or garee team) of farming groups. Each group has five households, and each network five groups, so one network has 25 households in it. Networks are based on geographic proximity, gender (male and female groups are separated), and land (membership requires access to it). Because income is not a determining factor, the groups are hypothetically economically mixed. Participation is high; in Tigray, 100% of farmers were said to participate in the development networks.

Figure 6.2
Ethiopia's Administrative Hierarchy



Source: Emmenegger (2016)

Figure 6.2 depicts the hierarchical administrative structure in which development networks (garee teams) are embedded. Development networks (garee teams) comprise a garee committee. Garee committees, in turn, comprise the gott (or gote; not pictured). Each kebele is comprised of gotts.³¹ Development networks/garee teams serve as the interface between farmers and the local kebele administration when it comes to seed aid, but they vary in structure by region (Chinigo, 2013). For instance, in Tigray, the networks collect eligibility-related information (assets, participation in social safety net program, double- or single-headed

³¹ The diagram presented in Figure 6.2 is simplified for heuristic purposes, varying slightly across Ethiopia's regions, as Emmenegger (2016) notes.

household, etc.) and pass it up to the kebele administration. The list is posted in a public place, where it can be vetted by community members and adjusted accordingly by the kebele. A DA interviewed during the ESAR claimed, “This validation process is a means of transparency.” In Amhara, by contrast, the head of the gott works with development network/garee team heads to select recommended beneficiaries. It is then vetted by an ad hoc kebele-level task force formed to oversee the distributions. After validating the list, the task force sends the list to the kebele administration. In Oromia, the MNGO and its subcontractors delivered seed aid directly; the local government played no role in the distributions.³²

In the cases of Tigray and Amhara, it is worth noting kebele administrations make the final decisions about who will receive seed aid, despite the recommendation and vetting processes presented as means of transparency. Also, despite the direct delivery of seed in Oromia, repeated complaints about corruption (Chapter 5) were issued by smallholders in that region—as well as by those in Tigray and Amhara. In other words, the espoused beneficiary selection criteria designed by the MNGO (discussed earlier) form but a part of the actual criteria-in-use for the selection of seed aid beneficiaries. As Aalen and Tronvoll (2009) note,

“Government officials presented the [gott] as a voluntary grassroots organization for development of local communities...ordinary people and even members of the [gott] councils were unequivocal about the fact that these structures were imposed from above by force.... [They were] perceived by most people as promoting the interests of EPRDF and not the public in general.” (p. 198)

³² The ESAR was not able to obtain information on the beneficiary selection processes for the study sites in SNNPR.

As an apparatus of the EPRDF, the kebele, the gote, and garee teams are used as administrative mechanisms of control, deployed to punish opposition supporters and to award loyalty, so fusing party and state (Aalen and Tronvoll, 2009; Vaughan and Tronvoll, 2002; Emmenegger, 2016; Brechenmacher, 2017). It is no surprise, then, that seed aid, which is delivered through these administrative structures, is subjected to their political logic—hence the repeated complaints from seed aid recipients about the beneficiary selection procedures (Chapter 5). The selection of seed aid recipients is governed only tangentially by the criteria set forth by the MNGO.

Discussion

In this chapter, I have suggested localized arms of GOE—at the woreda and kebele levels and below—exerted influence on the seed aid programs of 2016 in three ways. First, they monitored, and so controlled, the way seed recipients appraised the distributions during the course of the ESAR. Second, they attached conditions to seed aid. The most important and widespread prerequisite was that of fertilizer. Finally, GOE influenced who would and would not receive seed aid. In this section, I show how these three uses illustrate, and are embedded within, Ethiopia’s political economy. Following Berhanu (2012), I suggest we should view seed aid interventions in Ethiopia as an organized set of multi-institutional processes initiated by severe climatic dynamics that the state conforms ad hoc to its pre-eminent, dual-pronged project of economic growth and political control.

Long’s (2001) theory of planned intervention frames the analysis. In Chapter 4, I showed that Long sees interventions as inextricably tied to, and embedded in, the state’s pre-existing ambitions for local economic and political development. Intervention processes are constantly re-shaped by broader cultural and political dynamics, that is to say. They do not unfold in political

vacuums. “Interventions are always part of a chain or flow of events located within the broader framework of the activities of the state and/or international bodies,” Long reminds us (p. 32).

Increasingly, the broader framework of seed aid is disaster management. Particularly, GOE has grown increasingly interested in mitigating disasters to maintain economic growth. As we saw in Chapter 4, GOE pays lip service to proactive disaster management policy. Beyond rhetoric, though, the country signaled a forward-looking, if vague, policy commitment to “disaster management for growth” in its first Growth and Transformation Plan (GTP I) of 2010/11 – 2014/15.

...early warning for disaster prevalence [sic] and response capacity building, will be one of the keys [sic] tasks over the next five years. This will be practiced by considering timely response [sic] to disaster as an aim in supporting agriculture and economic development at large. (Ministry of Finance and Economic Development, 2010, p. 23)

Despite its conceptual brevity and ambiguity, the idea of disaster response as a way of “supporting agriculture and economic development” anticipated how the state’s thinking on the issue would evolve. Indeed, the Growth and Transformation Plan II (GTP II) of 2014/15 – 2019/20 enshrines a more robust, specific approach to managing disasters for growth, one that seems to build on the initial vision laid out in GTP I.

Parallel with examining the above mentioned enabling conditions for growth, analyzing threats and risk factors for growth will be given due consideration. In this regard, *unanticipated natural disaster, like that of drought, is likely to be the major threat for achieving the economic growth target.* The share of agriculture in GDP is still significant and the remaining sectors’ (i.e., industry and service sectors) growth is also influenced by the performance of the agricultural sector. *Thus, to mitigate the potential negative effect*

and sustain the growth momentum, the transformation of smallholder agriculture to become more resilient to such shocks is critical. Thus the on-going modernization of agriculture through the agricultural extension system and scaling up strategy, promotion of irrigation and water harvesting technologies, sustainable pastoral community development, and natural resource conservation and development strategies will be consolidated. In addition, building disaster prevention and management capacity will be given emphasis during the plan period. (National Planning Commission, 2016, pp. 100-101, emphases mine)

Here, disaster management is subjected explicitly to the demands of economic growth. The theory of change is implicit but straightforward. If disasters mitigate the gains of economic growth, and if agriculture especially is a key source of growth, then modernizing agriculture through the agricultural extension system will increase farmers' resilience to disasters. Increased resilience, in turn, will result in uninterrupted agricultural productivity, and thus more stable economic growth.³³ As such agricultural extension services are effectively compulsory (Planel, 2014).

EPRDF sees the success of the agricultural extension program as critical to the realization of these goals [i.e., of becoming a middle-income country], believing that the resulting

³³ One of the six intended outcomes of GOE's national strategy for its agricultural extension system likewise foresees its "smallholder farmers, agro-pastoralists and pastoralists [becoming] more resilient to disasters and climate change effects and [increasing] investments in disaster risk management (DRM) and climate smart agriculture" (MOA, 2014, p. 6).

broad-based agricultural growth would weaken support for the forces that are opposed to its dominance and survival. (Berhanu, 2012, p. 2)

This helps explain why EPRDF officials at the woreda level commonly condition the provision of fertilizer and other inputs on votes. “Allegedly [these] officials had threatened that any farmer who did not support their candidate would not receive inputs,” notes McCann (2002, p. 71), a threat underwritten by the fact that the ruling party dominates the importation and distribution of inputs such as fertilizer (Ketsela, 2006). Thus, given the “undefined boundary between the extension service and the local politics [sic],” farmers’ dissatisfaction is unsurprising (Elias et al., 2015).

In this paradigm, DAs are key actors—actors whose recent track record has been unsatisfactory, as GTP II goes on to indicate.

The major factor for the short fall in achieving the planned level of agricultural productivity [in 2014/15] is related to the coverage and quality of implementation of the agricultural extension system. The coverage and quality of the agricultural extension system was planned to be scaled up via mainly social learning among community development groups (‘agricultural development army’). The target set in the high case growth scenario would have been realized had the scaling up strategy been fully implemented within the framework of well-functioning agriculture [sic] development army. Looking forward, therefore, implementation of the full package of the scaling up strategy of the agricultural extension system will be a determining factor in increasing further production of smallholder farmers, and bringing about commercialization and transformation from subsistence farming to high value crop production. (National Planning Commission, 2016, p. 25)

The construal of extension workers (DAs) as a military force is apt, especially when we consider the draconian efforts invested by local government and DAs in fertilizer adoption (Cafer and Rikoon, 2017; Planel, 2014), and subsequently in payment collection for extension packages (Vaughan and Tronvoll, 2003).³⁴ Indeed, fertilizer is central to the “full package” positioned at the center of the government’s strategy for agricultural modernization (Keeley and Scoones, 2003).³⁵ Fertilizer supply benchmarking in GTP II embodies GOE’s strategic commitment to input intensification.

The supply of improved inputs that help increase agricultural production and productivity has expanded significantly during the GTP I period, but still falls short of the target set in order to transform smallholder agriculture. The amount of fertilizer supplied in 2014/15 was a record 1.201 million quintals, but this was only 72.2% of the target set for the year. (National Planning Commission, 2016, p. 25)³⁶

³⁴ “A point of concern is the frequent conflation of the role of tax collection with that of the agricultural development agent; even where extension agents are not explicitly involved in tax collection, they are often associated with pressure for repayment of credit loans related to the extension packages” (Vaughan and Tronvoll, 2003, p. 40).

³⁵ IFPRI’s 2010 assessment of the country’s agricultural extension system— funded by the Gates Foundation at the request of GOE—noted, “Smallholder access to fertilizer will be critical if Ethiopia is to see continuing increases in productivity” (Davis et al., 2010, p. 43). The report elides any discussion of the political dimensions of fertilizer use.

³⁶ Planel (2014) documents the process by which national input targets are applied at the district level.

The intention to ‘leverage’ disasters for development, paired with the failure to meet the fertilizer benchmark in 2014/15, helps explain why local government officials and extension workers attached conditions (namely fertilizer) to seed aid. As an employee of a subcontractor of the MNGO hypothesized during the ESAR, the fertilizer requirement migrated to emergency seed aid programs from more routine development programs that included distributions of free seed. The result is a top-down, supply-driven, target-based extension approach, not only between DAs and farmers, but between regional offices and woreda-level offices (Gebremedhin, Hoekstra and Tegegne, 2006; Spielman, Mekonnen and Alemu, 2012).

Table 6.5
The Evolution of Ethiopia’s Long-Term Vision

September 2010	May 2016
<p>“Ethiopia’s long-term vision to become a country where democratic rule, good-governance and social justice reigns, upon the involvement and free will of its peoples; and once extricating itself from poverty and becomes a middle-income country.” (Ministry of Finance and Economic Development, 2010, p. 7)</p>	<p>“The main basis of GTP II is the country’s vision to become a lower middle-income country by 2025. In the coming 10 years, Ethiopia’s vision is to reach the level of lower middle-income countries where democracy, good governance and social justice are maintained through people’s participation. The realization of this vision calls for creating competitive, productive and inclusive economy in all its aspects. This vision serves as a candle of hope indicating the long-term paths of the country towards prosperity and development. Therefore, every aspects [sic] of the plan emanate from this vision of becoming lower middle-income country by 2025.” (National Planning Commission, 2016, p. 76)</p>

The recent proliferations of benchmarks, targets, quotas and indicators are a microcosm of GOE’s evolving macroeconomic ambitions. In 2010, the country’s goal was simply to become a middle-income country. By the time the GTP II was issued—in 2016, a year after the El Niño-induced drought struck—GOE had placed a timeline on this goal: 2025 (Table 6.5). In February

2018, the State Minister for Foreign Affairs addressed the Human Rights Council, stressing the point.

We are now effectively implementing pro-poor and pro-growth development policies to eradicate extreme poverty and expedite our march towards becoming a middle-income country by 2025.... The violent disturbances in some parts of the country pose serious danger and have resulted in fatal injuries, destruction of properties, and affecting negatively [sic] economic growth of the country” (UN, 2018).

In this sense, it is no wonder seed aid is co-opted as a mechanism of agricultural modernization: the clock is ticking, and publicly so. Economic growth is a political imperative, and the pressure is mounting, as *The Washington Post* noted as recently as March 2018, when Ethiopia’s Parliament again ratified a state of emergency in the wake of Prime Minister Hailemariam Desalegn’s sudden resignation.

Ethiopia appears to be on the brink of the biggest political crisis since the communist regime was overthrown in 1991.... Over the past few years, as rural unrest over economic and political marginalization has grown...parties from Amhara and Oromo states have started...challenging official policy.... Outside the capital lies the vast Oromia region, which has been seething with resentment for the past three years about land seizures and a lack of jobs... (Schemm, 2018)

Agriculture-based economic development in the face of disasters represents, and is embedded in, a political project (Chinigo, 2013). It is one of self-preservation, deployed by the incumbent Ethiopian People’s Revolutionary Democratic Front (EPRDF), as Berhanu (2012) suggests.

EPRDF is striving to bring about economic development and improvement in people’s livelihood through which citizens would develop stakes in the continuity of the system.

This is why official government declarations repeatedly state that implementation of existing economic policies, including those concerned with agrarian transformation, would elevate the country to the status of a middle-income economy under which citizens could be extricated from underdevelopment....

Granted, economic growth is a political strategy from time immemorial. But in the Ethiopian context, it is a survival strategy that seems to derive from EPRDF's understanding that, historically, the fall of both the imperial and military regimes was driven by the disaffection of the peasantry (Berhanu, 2012; Lefort, 2012; Dessalegn, 2009, as cited in Chinigo, 2013). Hence Ethiopian smallholders are the constituency by whom and for whom development is realized.³⁷

We can view encounters concerning seed aid between smallholders and government officials using Long's (2001) concept of interfaces. Interfaces are sites of contest over the dominance of particular socio-cultural paradigms between groups of actors. When unequal power relations are present (i.e., when one set of actors has the ability to restrict access to resources), interfaces generate either resistance, strategic compliance, or accommodation (Scott, 1985, as cited by Long). This latter tactic of accommodation, which is a profound deference to authority, characterizes interfaces between smallholders and government officials. "The pattern of social interaction in Ethiopia hence sustains a strictly hierarchical stratification of society," note Vaughan and Tronvoll (2002), "where one is constrained, by a largely-invisible but rigid

³⁷ Despite the mounting pressure, GOE is succeeding in its quest, at least by some measures. Facilitated, in part, by public investment in the agricultural extension system, the increased adoption of modern inputs helped significantly raise yields over the past decade, which in turn more than doubled agricultural output (Bachewe, et al., 2018).

system of collective sanctions, to obey the ‘orders from above’ (*yebalal akal*)” (p. 33). This deferential “culture of power” is pervasive.

In Amharic, *mengist* refers to those authorities “designated indifferently as such, the ruling party, the state, and all their agents or members, including of course local authorities” (Lefort, 2010, p. 439).

The DAs... are perceived by almost all peasants as one of the main cogs in this *mengist* machinery, both statutorily and operationally. As interviewees stated, in all meetings, the DAs sit with the *mengist* on a podium beside the officials, while the peasants sit facing them. They are the main leaders when it comes to the compulsory execution of development work. (Lefort, 2012, p. 699)

In this sense, interfaces are the spatio-temporal events in which seed aid is converted by government authorities into uses aligned with its strategic goal of agriculture-led economic growth. Leveraging smallholders’ deference to authority sustains this conversion, regardless of whether it is a conscious manipulation of power.

GOE’s paradigm for state-driven development is controversial; it has been called “development without freedom” (Rawlence, 2010). Yet, despite its critics, the developmental state has also been defended as a serious alternative to the neoliberal ‘Washington Consensus’ (Mulu and Daba, 2017). The country’s growth rate now outpaces any other country on the continent, and their FDI is unmatched in East Africa. And, as Mkandawire (2001) points out, neoclassical readings of ‘successful’ development experiences (e.g., the East Asian ‘Four Tigers’) have downplayed the critical role of the state, despite mounting evidence to the contrary. He also reminds us of the catastrophic consequences of the retreat of the state under the structural adjustment programs in the 1980’s. That said, whether peasants can effectively

shoulder the burden of nation-building remains to be seen, in Ethiopia and elsewhere (Glenna et al., 2010). The task is reconciling the state's objectives with those of its subjects.

Chapter Summary

In this chapter, I demonstrated the ways GOE uses seed aid for its pre-eminent projects of economic growth and political control. For instance, seed aid distributions often entail coercion (to purchase fertilizer), exclusion (from emergency relief), and surveillance (to quell dissent). These features of seed aid describe strategies by which emergency relief resources are leveraged by the state to further realize its development aims. By setting the seed aid programs within the broader context of GOE's strategic ambitions, we note that disasters are a political threat, and that mitigating their economic consequences is central to EPRDF's survival, especially as unrest continues to build.

Chapter 7

Conclusion

Overview

A basic question has framed this dissertation. *How is seed aid used?* To that end, I have analyzed different ways seed aid in Ethiopia is used—principally by beneficiaries and by the Ethiopian state. In concluding, I review the principal findings of this study. Next, I present a set of recommendations for seed aid research. Finally, I discuss recommendations for seed aid policymaking.

Principal Findings

Seed aid and sowing rates. When smallholders receive seed aid, this does not necessarily result in increased sowing rates for that household. That said, in some scenarios there was a significant, positive correlation between quantities of seed aid received and changes in sowing rates. In these cases, it was at least partly because farmers judged prevailing climatic conditions to be conducive to that end. Only select seed aid crops received in select regions were associated with significant, positive changes in sowing rates—teff in Tigray, wheat and barley in Amhara. In these regions, the expectation of good weather was cited much more frequently as a reason for sowing more than normal than in SNNPR and Oromia. In these latter regions, teff (in SNNPR) and wheat (in Oromia) were said to be of decreasing importance on account of their susceptibility to drought. While Ethiopian farmers' perceptions about weather are based on a number of factors, the majority perceive changes in local temperature and rainfall conditions that correspond with the local meteorological record (Habtemariam et al., 2016). As such, when it comes to planting decisions, farmer perceptions and expectations on weather are both consequential and reliable. The differentiated uses of seed aid in which they result means seed aid cannot, ipso facto, be seen as an unconditional driver of agricultural recovery.

Seed aid as a seed market. Farmers in the ESAR sample indicated demand for improved varieties. These varieties are widely unavailable through normal channels in Ethiopia, especially for subsistence farmers. Their availability through seed aid distributions meant that the distributions functioned as an ad hoc ‘market’ for these prized varieties (McGuire, Sperling, and Man, 2016). Indeed, fully one-third of ESAR households had accessed new varieties through seed aid programs, predominantly wheat varieties, but also varieties of maize, teff, chickpea, and barley. Nearly all of these varieties are still being used by these households. This suggests farmers are eager to diversify and expand their seed portfolios.

Household differences in seed aid use. Farming households do not use seed aid in the same ways. Statistical tests presented in Chapter 5 demonstrated significant regional differences in the respective distributions of the share of seed aid planted, eaten, exchanged/sold, and stored. However, it is likely regionality suppresses a composite of factors influencing seed aid use, such as the timing of the seed’s delivery (i.e., whether farmers were able to plant during the appropriate sowing time) and the requisite sowing densities (kg./ha.) for different crops in different regions (i.e., whether more of Crop A had to be devoted to planting in Region A compared to Crop A in Region B, due to soil fertility or rainfall differences). More nuanced questions in seed aid research could help parse the issue of regional differences.

Differences in seed aid crops appear to influence the proportion that is diverted to consumption and the proportion that is planted. For example, households ate a relatively greater share of common bean than that of teff, and, accordingly, planted a relatively greater share of teff than of common bean. This is indicative of teff’s relatively greater value as a cultivated crop, and common bean’s relatively greater value as an immediate food source. Cultivated crops are often

eventual sources of food, too, of course, but the point is that seed aid may be sometimes be treated as food aid.

A final finding concerning household uses of seed aid is that female- and male-headed households did not exhibit statistically significant differences in the way they used seed aid. Although the role of female Ethiopian smallholders in agricultural production and in the management of plant genetic resources is generally under-appreciated, this demonstrates that, in the context of covariate stress, female-headed households pursue seed use allocation strategies commensurate to those headed by males (Ogato, Boon and Subramani, 2009; Tsegaye, 1997).

The instrumentalization of selection criteria. The beneficiary selection criteria developed by the MGNO for use by its regional offices and implementing partners were only tangentially related to the criteria-in-use. Especially in Tigray and Amhara, ESAR participants repeatedly complained about the influence of the local kebele administrations on who received seed aid. Nepotism describes one basis of the criteria-in-use. “The seed aid distribution is unfair and the kebele people provide to their relatives,” said one participant. Another basis is patronage. Seed aid is used to punish opposition supporters and award loyalty, a carrot-and-stick dynamic others have used to describe local administrative structures generally, reflecting GOE’s conflation of party and state (Aalen and Tronvoll, 2009; Tripp, 2001).

The selection criteria were also appropriated to advance GOE’s interest in modernizing the agricultural sector. Accessing seed aid was very often conditioned upon the purchase and/or use of fertilizer, as well as other inputs. For instance, in SNNPR, seed aid recipients repeatedly told us about the conditions attached to seed aid distributions by woreda and kebele officials. The conditions included purchasing fertilizer and implementing agronomic practices like sowing in lines and weeding regularly. Unsurprisingly, fertilizer applications in the ESAR sample were

widespread, as was the belief in the productive potential of the input. However, only a very small proportion of adopters financed the fertilizer through government-provided credit, partly because it is not always available, and partly because of GOE's draconian default policies. "I took credit at a 100% interest rate from a friend so I did not have to take credit from the government," said one participant. "The government will take away my house if I do not repay, unlike my friend." Coercive modernization efforts, in this sense, provide another hat for GOE to wear—that of userer (Cafer and Rikoon, 2017).³⁸

Disaster management as macroeconomic policy. The fertilizer issue is a microcosm of the way GOE is determined to realize economic growth, even in the face of disasters. As the country's current strategic plan, GTP II, puts it:

Unanticipated natural disaster, like that of drought, is likely to be the major threat for achieving the economic growth target. The share of agriculture in GDP is still significant and the remaining sectors' (i.e., industry and service sectors) growth is also influenced by the performance of the agricultural sector. Thus, to mitigate the potential negative effect and sustain the growth momentum, the transformation of smallholder agriculture to become more resilient to such shocks is critical. (National Planning Commission, 2016, pp. 100-101, emphases mine)

GOE aims not just to mitigate the negative effects of drought but to sustain growth in the face of them. This ambitious program is laid at the feet of the country's agricultural extension officers.

³⁸ "[In Africa, as elsewhere, governments'] capacity to coerce is thus used to defend and perpetuate basic policy commitments and the political and economic order they create" (Bates, 2014, p. 106).

The major factor for the short fall in achieving the planned level of agricultural productivity [in 2014/15] is related to the coverage and quality of implementation of the agricultural extension system.... The target set in the high case growth scenario would have been realized had the scaling up strategy been fully implemented within the framework of well-functioning agriculture [sic] development army. Looking forward, therefore, implementation of the full package of the scaling up strategy of the agricultural extension system will be a determining factor in increasing further production of smallholder farmers and bringing about commercialization and transformation from subsistence farming to high value crop production. (National Planning Commission, 2016, p. 25)

GOE's economic endgame is becoming a lower middle-income country. In 2010, there was little indication this was more than a "long-term vision" (Ministry of Finance and Development, 2010, p. 7). In 2016, however, the country placed a timeline on the goal: 2025. In this sense, it is no wonder seed aid is utilized as a mechanism of agricultural modernization. The clock is ticking, and publicly so. Economic growth is a political imperative, especially as unrest mounts following the resignation of Prime Minister Desalegn in February 2018.

The coincidence of nation-building and livelihood strategies. An over-arching finding of this dissertation is that the state and the smallholder use seed aid, albeit in different ways. The Ethiopian developmental state seeks to conform seed aid programs to its requirements for agriculture-led economic growth. At the same time, smallholders use seed aid in order to meet their livelihood requirements. These respective utilization strategies interact as seed aid beneficiaries are selected, as the seed is distributed, and even as the effects of the aid are evaluated.

More to the point, however, nation-building and livelihood strategies coincided in the midst of a national emergency precipitated by El Niño, not in a time of relative peace and stability. GOE's willingness to maintain with draconian force its project of agriculture-led economic growth in the context of a crisis for already-vulnerable agriculturalists raises an unsettling question: If nation-building undermines the social conditions on which it is predicated, what notion of 'nationhood' is retained? Because Ethiopia's imperial and military regimes were precipitated by the disaffection of the peasantry, the solution for Prime Minister Ahmed seems to lie in reconciling the aims of the state with those of its subjects.

Recent developments seem to indicate Ahmed is attempting to strike this balance. For instance, from a trade perspective, the recent peace agreement between Ethiopia and its long-time enemy and neighbor, Eritrea, seems positive on all fronts.

Eritreans have been marching to [Ethiopian border towns] to buy cement, bricks, macaroni, spaghetti, hardwood, teff, pepper powder and other commodities and merchandise. Ethiopians are also buying products such as televisions, mobile phone devices and livestock by travelling as far as the capital Asmara.

"We started seeing many vehicles with Eritrean plates moving around in Adigrat on Wednesday," said Muluberhan G. Wahid, a resident in Adigrat. "Most of them were loaded with commodities and merchandise bought from the local market. (Tadesse, 2018)

In a country like Ethiopia, however, it is inevitable disaster will strike again. Will smallholders in crisis again be given aid only if they purchase fertilizer or support the correct political party? Experience has shown the country's peasantry have a limited tolerance for such treatment, and there is nothing to suggest history will not repeat itself.

A cautious view, borne of recent historical experience, of the Ethiopian state's capacity to actualize nation-building neither dismisses nor precludes the importance of economic growth. In the view of some, however, it should be autochthonous.

Both the invidious comparisons of African capitalists with idealized capitalists elsewhere and the fear of capture by rent seekers or patron-client networks have led to a negative and naïve view of the interrelation between public power and private interests, a view that pre-empts or precludes the possibility of building positive coalitions between the state and the business community. The presumption is simply that the state-capitalist relationship in Africa can only be collusive and not synergistically and mutually reinforcing or benignly cooperative and collaborative. As a consequence, in the African case the call for state autonomy has been tantamount to a call for 'isolation' by delinking the state from its social roots while subjecting it to external 'agents of restraints' through a battery of conditionalities and technical assistance. Compounding matters has been the 'hijacking' of key state functions by international financial institutions, further distancing the state from local capitalists. (Mkandawire, 2001, pp. 308-309)

Therein may lie a way forward for the Prime Minister: building the capacity of Ethiopian, rather than Chinese, investors to underwrite infrastructure projects, create good-paying jobs, and provide smallholder farmers with the capital they need to establish resilient and self-reliant livelihoods.

Research Recommendations

This section presents three recommendations for researchers who study seed aid. The first concerns understanding the timing of seed aid delivery. The ESAR asked direct questions on this

topic, i.e., whether the seed was delivered either well in advance, on time, somewhat late, or too late. This approach is efficient, but it assumes the concept of timing is interpreted in the same way by respondents without offering a precise definition of it. A more helpful approach would be to establish when the seed was received relative to the household's perception of the planting period. For instance, researchers could ask whether the household received the seed aid before, during, or after the sowing period. If it was received before or after the sowing period, by how many weeks? This approach has two advantages. One, it provides practitioners with a concrete sense of the timeliness of their response. Two, it could help explain differences in how seed aid is used, since the way households use seed aid is conceivably dependent upon when they receive it.

Second, because acute food insecurity is a direct and significant consequence of droughts, and because the effects of seed aid on food security are not understood, researchers should consider integrating a module that assesses this relationship (Webb, 1993). The selection of appropriate food security metrics should be driven by the components of food security deemed most salient (i.e., food availability, food access, utilization, or stability), the needs of the end users of the data, and the final purpose of the data itself (Jones et al., 2013). More insight into the relationship between seed aid and food security can help researchers and decision-makers alike better understand the effects of giving out free seed in crisis contexts.

Third, researchers should question whether seed aid is further entrenching farmers' dependency on NGOs and the state for their livelihoods (Sperling and McGuire, 2010). The question is not whether farmers should be able to depend on aid to meet basic needs in the face of shocks, but whether seed aid induces a dependency syndrome in which farmers reduce efforts to sustain their own livelihoods (Siyoum, Hilhorst, and van Uffelen, 2012; Little, 2006). In the

ESAR, 30% of all seed farmers sowed for both the Belg and Meher cropping seasons was derived from seed aid. The question is whether farmers anticipated this share of their seed needs being met by seed aid, and whether they modified their behavior in anticipation of it. To measure dependency syndrome, researchers could assess the sufficiency, timeliness and predictability of seed aid, as Siyoum, Hilhorst, and van Uffelen (2012) do in their study of food aid dependence in Ethiopia.

Finally, providing an unstructured opportunity for farmers to comment on the seed aid distributions revealed profound misgivings about the impartiality of the government's role in these programs. Complaints about corruption were by far the most direct critique of the seed aid distributions of 2016. For seed aid researchers, this underscores the utility of asking for open-ended feedback, especially in a cultural context where deference and equivocation are prevalent (Keeley and Scoones, 2000; Vaughan and Tronvoll, 2002).

Practical Recommendations

Building on the findings presented earlier in this chapter, I conclude with some recommendations for practitioners who implement seed aid programs. These suggestions complement, and so do not re-iterate, those identified by McGuire, Sperling, and Man (2016). First, NGOs could pre-identify seed aid sources of varieties that are well-adapted to intervention zones; given the fast pace of seed aid programs, it may be unrealistic to expect this degree of scrutiny once an emergency intervention is underway. Discussions with local farmers, agronomists, extension workers, and ESE could inform the development of a list of adapted varieties, the zone within which the variety is adapted, and estimates of seed supply from month to month. In particular, teff distributed by the MGNO for the Meher season was found to be poorly adapted.

Quoted at length here, Richards' and Ruivenkamp's (1997) idea of a 'regional seed safety web' supports the idea of a local network that can help responders rapidly access appropriate germplasm.

The old conception of a genebank as a freestanding, static, 'hardware' facility should be replaced, we suggest, by a new 'software' conception: a sociotechnical ensemble, linking seed reserves, seed systems, information networks, technical facilities, relief agencies and farmer groups in a transnational web of mutually reinforcing interactions (a seed-safety actor-network). We propose calling this the regional seed safety web (RSSW). In an ideal model the RSSW should be in place before conflict arises. The present challenge is to construct such webs in conditions of ongoing conflict and post-war recovery. We propose to start the process of webbuilding in a 'bottom-up' manner, trying whenever possible to adapt the first steps in this new seed security initiative to the work patterns of relief agencies in the field.

A second recommendation also relates to seed aid itself. Seed aid distributions may be an effective way to disseminate legume and horticultural seeds. Although emergency interventions are not an appropriate context for experimenting with crop diversification, it should not be a foregone conclusion that cereals such as maize and wheat are entirely sufficient for agricultural recovery. As we saw in Chapter 5, a number of ESAR participants indicated an interest in horticultural crops, such as cabbage, carrots, mango, and avocado. Crop diversification has been shown to have a strong and positive association with crop productivity, crop income, food security and nutrition measures (Makate et al., 2016; Bangwayo-Skeete, Bezabih, and Zikhali, 2012; Di Falco, Bezabih, and Yesuf, 2010).

Third, to mitigate some of the politicized influence of local administrations and more effectively reach the most vulnerable beneficiaries, practitioners should consider working with alternative local social networks of mutual support in seed distribution. For example, in a case of emergency seed relief in Northern Ethiopia, Pratten (1997) explains how one NGO worked with local burial societies (*kires*). These groups assumed responsibility for targeting the area's most vulnerable households, openly ranking them at public meetings on the basis of collective agreement. Establishing verbal or written memorandums of understanding with mutual support groups in non-emergency periods would make it simpler to leverage these networks in times of aid distribution.

Fourth, although it would be impractical in the near-term to suggest direct-to-farmer seed distributions that circumvent local government bodies, this should potentially be an ideal. One specific approach to this end would be to reconsider direct distributions of seed, and instead consider voucher-based approaches in which farmers attend 'seed fairs' and exchange vouchers for seeds of their own choosing (Davis, Keane, and Sperling, 2017). Piloting a seed fair in a non-emergency context may be a good way to address GOE's reticence to loosen their hold on seed markets, especially if the pilot presents an opportunity for the government to be seen internationally as a progressive reformer of aid programs.

Finally, even if seed aid can provide a critical, stopgap measure in crisis, medium- and long-term focus should be dedicated to building resilience and capacity in local seed systems (Cromwell, Sperling, and Tripp, 2001; Zimmerer, 2017). At the same time, because seed insecurity is often a function of access rather than availability, smallholders need opportunities to diversify and strengthen their livelihoods. The task for the donor community is to find a creative

balance between preventive and reactive investments that effectively helps farmers on the path to self-reliance.

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Appendix A: ESAR Survey Instrument

SEED AID ETHIOPIA REVIEW – MEHER AND BELG 2016

1. Interview # _____ 2. Interviewer name: _____ 3. Organization: _____ 4. Date: _____

5. Household head: _____ 6. HH Head Age: _____ 7. HH Head Sex: (CIRCLE ONE) M | F

8. HH Head: (CIRCLE ONE) adult head | child head | elder head 9. HH size: _____

10. Area cult. [*Meher* 2016]: (CIRCLE ONE) < 0.5 ha. / 0.5-1.0 ha. / >1-2 ha. / > 2 ha.

11. Region: _____ 12. Woreda: _____ 13. Kebele: _____

PART I. SEED SOURCES FOR CROPS GROWN – MEHER 2016: (June – Aug 2016)

1. For the recent Meher season (2016), what were your two most important crops for which you used seed or planting material?

Crop A:	Crop B:
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2. For Crop A, in Question 1, from where did you obtain your seed, how was it acquired, which variety was used,-- etc (see table below).

Crop A: _____ (fill in crop name)

Sources of Seed planted <small>list ALL sources See codes 1-10</small>	How acquired <small>see codes A-K</small>	Quantity local units		Qty (kgs)	Seed /Variety Quality?: G=good A=average P= Poor	Yield? G=good A=average P= Poor
		#	Unit			
Total planted for Crop A						

Sources of seed: CODES 1= home-saved/own stocks 2= carryover- hybrids 3= friends/neighbors/relatives 4= local market / trader 5= agro-input dealer 6= community-based seed groups 7= government 8= NGO /FAO 9= contract growers 10= (specify)	How acquired: CODES A= save/own stocks B=exchange/barter C= gift (friend/neighbor/relatives) D= purchase/buy E= vouchers/coupons (sometimes w/fairs) F=direct seed distribution G= seed loan H= food aid I= money credit J=seed for labor K=other
--	---

3. Follow-up questions for Crop A

Total quantity actually planted this last season (see above)	Normally, how much seed do you plant this season?	This season, did you plant M=more; S=same; or L=less than usual?	If different (M or L) explain (see separate code list: 1-35)

Appendix A: ESAR Survey Instrument (continued)

4. For Crop B, in Question 1, from where did you obtain your seed, how was it acquired, which variety was used,-- etc (see table below).

Crop B _____ (fill in crop name)

Sources of Seed planted list ALL sources <u>See codes 1-10</u>	How acquired <u>see codes A-K</u>	Quantity local units		Qty (kgs)	Seed /Variety Quality?: G=good A=average P= Poor	Yield? G=good A=average P= Poor
		#	Unit			
Total planted for Crop B						

Sources of seed: CODES 1= home-saved/own stocks 2= carryover- hybrids 3= friends/neighbors/relatives 4= local market / trader 5= agro-input dealer		How acquired: CODES A= save/own stocks B=exchange/barter C= gift (friend/neighbor/relatives) D= purchase/buy E= vouchers/coupons (sometimes w/fairs)	
6= community-based seed groups 7= government 8= NGO /FAO 9= contract growers 10= (specify)		F=direct seed distribution G= seed loan H= food aid I= money credit J=seed for labor K=other	

5. Follow-up questions for Crop B

Total quantity actually planted this season (see above)	Normally, how much seed do you plant this season?	This season, did you plant M=more; S=same; or L=less than usual?	If different (M or L) explain (see separate code list: 1-35)

Appendix A: ESAR Survey Instrument (continued)

PART II. SEED SOURCES FOR CROPS GROWN LAST BELG: (Sowing Feb-April 2016)

1. For the recent Belg season (2016), what were your two most important crops for which you used seed or planting material ?

Crop A: _____ Crop B: _____

2. For Crop A, in Question 1, from where did you obtain your seed, how was it acquired, which variety was used,-- etc
 Crop A: _____ (fill in crop name)

Sources of Seed planted list ALL sources <u>See codes 1-10</u>	How acquired <u>see codes A-K</u>	Quantity local units		Qty (kgs)	Seed /Variety Quality?: G=good A=average P= Poor	Yield? G=good A=average P= Poor
		#	Unit			
Total planted for Crop A						

Sources of seed: CODES 1= home-saved/own stocks 2= carryover- hybrids 3= friends/neighbors/relatives 4= local market / trader 5= agro-input dealer	6= community-based seed groups 7= government 8= NGO /FAO 9= contract growers 10= (specify)	How acquired: CODES A= save/own stocks B=exchange/barter C= gift (friend/neighbor/relatives) D= purchase/buy E= vouchers/coupons (w/ fairs)	F=direct seed distribution G= seed loan H= food aid I= money credit J=seed for labor K=other
--	--	---	---

3. Follow-up questions for Crop A

Total quantity actually planted this last season	Normally, how much seed do you plant this season?	This season, did you plant M=more; S=same; or L=less than usual?	If different (M or L) explain (see separate code list: 1-35)

4. For Crop B, in Question 1, from where did you obtain your seed, how was it acquired, which variety was used,-- etc
 Crop B: _____ (fill in crop name)

Sources of Seed planted list ALL sources <u>See codes 1-10</u>	How acquired <u>see codes A-K</u>	Quantity local units		Qty (kgs)	Seed /Variety Quality?: G=good A=average P= Poor	Yield? G=good A=average P= Poor
		#	Unit			
Total planted for Crop B						

5. Follow-up questions for Crop B

Total quantity actually planted this season (see above)	Normally, how much seed do you plant this season?	This season, did you plant M=more; S=same; or L=less than usual?	If different (M or L) explain (see separate code list: 1-35)

Appendix A: ESAR Survey Instrument (continued)

PART III. SEED AID FOR MEHER 2016 (Sowing June – Aug 2016)			
1. Which were the three most important crops you received as SEED AID for the MEHER 2016?			
Crop 1 _____		Crop 2 _____	
Crop 3 _____			
2. For each crop, indicate what you did with the seed aid you received	MEHER Crop 1: _____		MEHER Crop 2: _____
	Kgs	%	Kgs %
Planted	10	40	
Eaten			
Exchanged/Sold	5	20	
Stored	10	40	
Other (Explain: _____)			
Total	25	100%	100%
3. Did you feel this was the correct crop for the situation? (CIRCLE ONE)	YES NO Don't Know Comments:	YES NO Don't Know Comments:	YES NO Don't Know Comments:
4. Did you feel this was the correct variety for the situation? (CIRCLE ONE)	YES NO Don't Know Comments:	YES NO Don't Know Comments:	YES NO Don't Know Comments:
5. How does the quality of the seed received compared to what you normally use? (sorting, damage, etc.) (CIRCLE ONE)	BETTER SAME WORSE Comments:	BETTER SAME WORSE Comments:	BETTER SAME WORSE Comments:
6. How does the germination rate compare to what you normally use? (CIRCLE ONE)	BETTER SAME WORSE Comments:	BETTER SAME WORSE Comments:	BETTER SAME WORSE Comments:
7. How does the yield of the seed received compare to your normal yields? (CIRCLE ONE)	VERY GOOD GOOD AVERAGE POOR VERY POOR Comments:	VERY GOOD GOOD AVERAGE POOR VERY POOR Comments:	VERY GOOD GOOD AVERAGE POOR VERY POOR Comments:
8. In terms of sowing time, was this aid delivered...? (CIRCLE ONE)	WELL IN ADVANCE ON TIME SOMEWHAT LATE TOO LATE Comments:	WELL IN ADVANCE ON TIME SOMEWHAT LATE TOO LATE Comments:	WELL IN ADVANCE ON TIME SOMEWHAT LATE TOO LATE Comments:

Appendix A: ESAR Survey Instrument (continued)

PART IV. SEED AID FOR BELG 2016 (Sowing Feb. – April 2016)						
1. Which were the three most important crops you received as SEED AID for the MEHER 2016?						
Crop 1 _____		Crop 2 _____		Crop 3 _____		
2. For each crop, indicate what you did with the seed aid you received	BELG Crop 1: _____		BELG Crop 2: _____		BELG Crop 3: _____	
	<i>Kgs</i>	%	<i>Kgs</i>	%	<i>Kgs</i>	%
Planted						
Eaten						
Exchanged/Sold						
Stored						
Other (Explain: _____)						
Total		100%		100%		100%
3. Did you feel this was the correct <u>crop</u> for the situation? (CIRCLE ONE)	YES NO Don't Know Comments:		YES NO Don't Know Comments:		YES NO Don't Know Comments:	
4. Did you feel this was the correct <u>variety</u> for the situation? (CIRCLE ONE)	YES NO Don't Know Comments:		YES NO Don't Know Comments:		YES NO Don't Know Comments:	
5. How does the <u>quality</u> of the seed received compared to what you normally use? (sorting, damage, etc.) (CIRCLE ONE)	BETTER SAME WORSE Comments:		BETTER SAME WORSE Comments:		BETTER SAME WORSE Comments:	
6. How does the <u>germination rate</u> compare to what you normally use? (CIRCLE ONE)	BETTER SAME WORSE Comments:		BETTER SAME WORSE Comments:		BETTER SAME WORSE Comments:	
7. How does the <u>yield</u> of the seed received compare to your normal yields? (CIRCLE ONE)	VERY GOOD GOOD AVERAGE POOR VERY POOR Comments:		VERY GOOD GOOD AVERAGE POOR VERY POOR Comments:		VERY GOOD GOOD AVERAGE POOR VERY POOR Comments:	
8. In terms of sowing time, was this aid delivered...? (CIRCLE ONE)	WELL IN ADVANCE ON TIME SOMEWHAT LATE TOO LATE Comments:		WELL IN ADVANCE ON TIME SOMEWHAT LATE TOO LATE Comments:		WELL IN ADVANCE ON TIME SOMEWHAT LATE TOO LATE Comments:	

Appendix A: ESAR Survey Instrument (continued)

Part V. REFLECTIONS ON SEED AID

SEED AID IN GENERAL

1. How many times have you received seed aid in the last five years? (*CIRCLE ONE*)

1 2 3 4 5 6 7 8 9 10 More than 10 times

2. Which method(s) of seed aid have you received? (*CIRCLE ALL THAT APPLY*)

Direct Seed Distribution Seed Vouchers Revolving Seed Loans Cash Other: _____

3. Is there a method of seed aid you like the MOST? (*CIRCLE ONE*) YES NO

→ 4. If YES, which one? (*CIRCLE ONE*)

Direct Seed Distribution Seed Vouchers Revolving Seed Loans Cash Other: _____

→ 5. If YES, why? (*TICK ALL THAT APPLY*)

Get new crop or variety _____	There is no necessary bargaining _____
Get crops/varieties better adapted to climate change _____	Get seed (so money not diverted) _____
Get good quality seed _____	Don't have to repay _____
Get seed on time _____	Avoids dependency _____
Logistics/access is easy _____	Prevents corruption _____
Can choose my own crops/varieties _____	Other _____

6. Is there a method of seed aid you like the LEAST? (*CIRCLE ONE*) YES NO

→ 7. If YES, which one? (*CIRCLE ONE*)

Direct Seed Distribution Seed Vouchers Revolving Seed Loans Cash Other: _____

→ 8. If YES, why? (*TICK ALL THAT APPLY*)

Get wrong varieties/crop _____	Takes too much time/difficult access _____
Get bad quality seed _____	There is a lot of cheating _____
Seed comes late _____	Have to repay _____
There is no choice on crop or variety _____	Prices are fixed/expensive
	Other _____

SEED AID AND YOUR FARM

9. Over the years, has seed aid introduced new crops to your farm? (*CIRCLE ONE*) YES NO

If YES, then fill in table below

CROP	year	Still using this crop?		If not using, why not?		
		Yes	NO	Did not like crop	Lost seed	Other (Explain)

Appendix A: ESAR Survey Instrument (continued)

10. Over the years, has seed aid introduced new varieties to your farm? (CIRCLE ONE) YES NO

If YES, then fill in table below

Variety	year	Still using this variety?		If not using, why not?		
		Yes	NO	Did not like variety	Lost seed	Other (Explain)

11. Over the years, has seed aid changed how much you produce overall? (CIRCLE ONE) YES NO

12. → If YES, indicate the percentage in the table below in either the INCREASED or DECREASED boxes (CIRCLE ONE)

SEED AID INCREASED PRODUCTION				SEED AID DECREASED PRODUCTION			
0 to +25%	+26 to 50%	+51 to 75%	+76 to 100%	0 to -25%	-26 to -50%	-51 to -75%	-76 to -100%

SEED AID AND THE BIGGER EFFECTS

13. Overall, over the years, have there been any particular GOOD longer-term effects of seed aid? (CIRCLE ONE)
YES NO

→ 14. Please explain: _____

15. Overall, over the years, have there been any particular BAD longer-term effects of seed aid? (CIRCLE ONE)
YES NO

→ 16. Please explain: _____

17. Has seed aid affected the food supply in your household? (CIRCLE ONE) YES NO

→ 18. If yes, how (tick all that apply)?

GOOD impact				BAD impact			
More food	Better quality food	More money to buy food	Other (if yes, explain)	Poor production	Food we don't like	Crops that do not sell	Other
	X	X					
			Explain				Explain

Appendix A: ESAR Survey Instrument (continued)

19. Has seed aid affected how you use your land? (CIRCLE ONE) YES NO → 20. If yes, how? (tick all that apply) :						
GOOD impacts					BAD impacts	VARIETY impact
Sow MORE land overall	Sow MORE of the seed aid crop	Use MORE inputs	Don't need to RENT OUT my land	Other	(If answered, Give reason below)	Stopped or decreased LOCAL variety use of seed aid crop
				Explain	Explain	
21. Has seed aid affected how your household manages it money? (CIRCLE ONE) YES NO → 22. If yes, how? (tick all that apply):						
GOOD impacts				BAD impacts		
Could spend money on other things	Didn't have to take loan / high interest rates	Didn't have to sell labor	Other	(If answered, Give reason below)		
If yes, on what?: (tick box)			Explain	Explain		
<u>School fees</u>						
<u>Health costs</u>						
<u>House</u>						
<u>Farm</u>						
<u>Livestock</u>						
<u>Pay off loans</u>						
<u>Other</u>						
23. Has seed aid affected your relationships (family members, neighbors, government, etc)? (CIRCLE ONE) YES NO → 24. If YES, which relationship change has been MOST important? _____ → 25. Has the change been good or bad?: _____ → 26. Explain: _____ _____						
27. Do you want to add anything else? _____ _____						
Thank you. Do you have any questions?						

Appendix B: ESAR Survey Instrument Appendix

	MEHER Seed Aid Crop 1: _____	MEHER Seed Aid Crop 2: _____	MEHER Seed Aid Crop 3: _____
What practices did you implement for this particular crop? (Tick ALL that apply)	<input type="checkbox"/> Fertilizer <input type="checkbox"/> Sowing in Lines <input type="checkbox"/> Other (Specify: _____)	<input type="checkbox"/> Fertilizer <input type="checkbox"/> Sowing in Lines <input type="checkbox"/> Other (Specify: _____)	<input type="checkbox"/> Fertilizer <input type="checkbox"/> Sowing in Lines <input type="checkbox"/> Other (Specify: _____)
If you used FERTILIZER, how many Birr did you spend on it FOR THIS CROP ONLY?	_____ Birr	_____ Birr	_____ Birr
If you used FERTILIZER, where did you get it from?	<input type="checkbox"/> The government <input type="checkbox"/> Friend/neighbor/relative <input type="checkbox"/> Agro-market <input type="checkbox"/> Other (Specify: _____)	<input type="checkbox"/> The government <input type="checkbox"/> Friend/neighbor/relative <input type="checkbox"/> Agro-market <input type="checkbox"/> Other (Specify: _____)	<input type="checkbox"/> The government <input type="checkbox"/> Friend/neighbor/relative <input type="checkbox"/> Agro-market <input type="checkbox"/> Other (Specify: _____)
If you used FERTILIZER, how did you get the money to pay for it?	<input type="checkbox"/> Saved funds <input type="checkbox"/> Friend/neighbor/relative <input type="checkbox"/> Took credit from the government <input type="checkbox"/> Took credit from elsewhere (Specify: _____) <input type="checkbox"/> Other (Specify: _____)	<input type="checkbox"/> Saved funds <input type="checkbox"/> Friend/neighbor/relative <input type="checkbox"/> Took credit from the government <input type="checkbox"/> Took credit from elsewhere (Specify: _____) <input type="checkbox"/> Other (Specify: _____)	<input type="checkbox"/> Saved funds <input type="checkbox"/> Friend/neighbor/relative <input type="checkbox"/> Took credit from the government <input type="checkbox"/> Took credit from elsewhere (Specify: _____) <input type="checkbox"/> Other (Specify: _____)
If you took credit from the government to pay for the fertilizer, how much did YOU pay as an advance?	<input type="checkbox"/> 0% (_____ Birr) <input type="checkbox"/> 10% (_____ Birr) <input type="checkbox"/> 25% (_____ Birr) <input type="checkbox"/> 50% (_____ Birr) <input type="checkbox"/> Other (____% / _____ Birr)	<input type="checkbox"/> 0% (_____ Birr) <input type="checkbox"/> 10% (_____ Birr) <input type="checkbox"/> 25% (_____ Birr) <input type="checkbox"/> 50% (_____ Birr) <input type="checkbox"/> Other (____% / _____ Birr)	<input type="checkbox"/> 0% (_____ Birr) <input type="checkbox"/> 10% (_____ Birr) <input type="checkbox"/> 25% (_____ Birr) <input type="checkbox"/> 50% (_____ Birr) <input type="checkbox"/> Other (____% / _____ Birr)
If you took credit (from any source), how much of the credit have you ALREADY PAID BACK?	_____ Birr	_____ Birr	_____ Birr
If there is no seed aid next season, would you BUY FERTILIZER YOURSELF?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Don't Know	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Don't Know	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Don't Know
Why? →			
If there is no seed aid next season, would you SOW IN LINES YOURSELF?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Don't Know	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Don't Know	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Don't Know
Why? →			
If there is no seed aid next season, would you BUY IMPROVED/CERTIFIED SEED YOURSELF?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Don't Know	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Don't Know	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Don't Know
Why? →			
Do you know people who did NOT take the seed aid because they had to get fertilizer?	<input type="checkbox"/> Yes <input type="checkbox"/> No		
If yes, how many people?	_____ people		
Do you have other comments on the full seed aid package for the MEHER?			

Appendix B: ESAR Survey Instrument Appendix (continued)

	BELG Seed Aid Crop 1: _____	BELG Seed Aid Crop 2: _____	BELG Seed Aid Crop 3: _____
What practices did you implement for this particular crop? (Tick ALL that apply)	<input type="checkbox"/> Fertilizer <input type="checkbox"/> Sowing in Lines <input type="checkbox"/> Other (Specify: _____)	<input type="checkbox"/> Fertilizer <input type="checkbox"/> Sowing in Lines <input type="checkbox"/> Other (Specify: _____)	<input type="checkbox"/> Fertilizer <input type="checkbox"/> Sowing in Lines <input type="checkbox"/> Other (Specify: _____)
If you used FERTILIZER, how many Birr did you spend on it FOR THIS CROP ONLY?	_____ Birr	_____ Birr	_____ Birr
If you used FERTILIZER, where did you get it from?	<input type="checkbox"/> The government <input type="checkbox"/> Friend/neighbor/relative <input type="checkbox"/> Agro-market <input type="checkbox"/> Other (Specify: _____)	<input type="checkbox"/> The government <input type="checkbox"/> Friend/neighbor/relative <input type="checkbox"/> Agro-market <input type="checkbox"/> Other (Specify: _____)	<input type="checkbox"/> The government <input type="checkbox"/> Friend/neighbor/relative <input type="checkbox"/> Agro-market <input type="checkbox"/> Other (Specify: _____)
If you used FERTILIZER, how did you get the money to pay for it?	<input type="checkbox"/> Saved funds <input type="checkbox"/> Friend/neighbor/relative <input type="checkbox"/> Took credit from the government <input type="checkbox"/> Took credit from elsewhere (Specify: _____) <input type="checkbox"/> Other (Specify: _____)	<input type="checkbox"/> Saved funds <input type="checkbox"/> Friend/neighbor/relative <input type="checkbox"/> Took credit from the government <input type="checkbox"/> Took credit from elsewhere (Specify: _____) <input type="checkbox"/> Other (Specify: _____)	<input type="checkbox"/> Saved funds <input type="checkbox"/> Friend/neighbor/relative <input type="checkbox"/> Took credit from the government <input type="checkbox"/> Took credit from elsewhere (Specify: _____) <input type="checkbox"/> Other (Specify: _____)
If you took credit from the government to pay for the fertilizer, how much did YOU pay as an advance?	<input type="checkbox"/> 0% (_____ Birr) <input type="checkbox"/> 10% (_____ Birr) <input type="checkbox"/> 25% (_____ Birr) <input type="checkbox"/> 50% (_____ Birr) <input type="checkbox"/> Other (____% / _____ Birr)	<input type="checkbox"/> 0% (_____ Birr) <input type="checkbox"/> 10% (_____ Birr) <input type="checkbox"/> 25% (_____ Birr) <input type="checkbox"/> 50% (_____ Birr) <input type="checkbox"/> Other (____% / _____ Birr)	<input type="checkbox"/> 0% (_____ Birr) <input type="checkbox"/> 10% (_____ Birr) <input type="checkbox"/> 25% (_____ Birr) <input type="checkbox"/> 50% (_____ Birr) <input type="checkbox"/> Other (____% / _____ Birr)
If you took credit (from any source), how much of the credit have you ALREADY PAID BACK?	_____ Birr	_____ Birr	_____ Birr
If there is no seed aid next season, would you BUY FERTILIZER YOURSELF?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Don't Know	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Don't Know	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Don't Know
Why? →			
If there is no seed aid next season, would you SOW IN LINES YOURSELF?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Don't Know	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Don't Know	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Don't Know
Why? →			
If there is no seed aid next season, would you BUY IMPROVED/CERTIFIED SEED YOURSELF?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Don't Know	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Don't Know	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Don't Know
Why? →			
Do you know people who did NOT take the seed aid because they had to get fertilizer?	<input type="checkbox"/> Yes <input type="checkbox"/> No		
If yes, how many people?	_____ people		
Do you have other comments on the full seed aid package for the BELG?			

Appendix C: Community Meeting Instrument

Village_____	Date_____	Note recorder_____	Int#_____
District_____		Location_____	
Group Interview: # Total_____		#Men_____	#Women_____
<p>Note: The questions below are broad guide questions. Most important is to stimulate discussion and insights on strategy.</p>			
<p>PART I. OVERALL CROP PROFILES AND TRENDS (QUICK OVERVIEW)</p>			
<p>1. We would like to learn about the main uses of your most important crops for food and/or for income. Please rate their importance in each of the two categories -- as High (H) Medium (M) or Low (L). Also indicate if any of the crops are further transformed.</p>			
Crop	Use for Food (H**, M**, or L*)	Use for Income (H**, M**, or L*)	Any transformation? Specify
<p>Indicate which crops are most important for FOOD SECURITY_____</p> <p>Indicate which crops are most important for INCOME_____</p> <p>Indicate which crops are most important for NUTRITION_____</p>			
<p>2. For the last 3 seasons- how would you rate each season overall in terms of your key crops: good, average, poor (starting from current season).</p>			
Key crops	Current season: date Good , average, poor-by key crop	Previous season : date Good , average, poor-by key crop	2nd previous season: date Good , average, poor-by key crop
<p>3. In the last five years, have there been changes in proportions of crops planted in your community?</p>			
Crops gaining in area and why		Crops decreasing in area and why	
Any new crops last 5 years?			
<p>4. Generally, what have been the major constraints you have faced in agriculture production over the last five years—and what do you see as the opportunities (Probe: do women have the same constraints and opportunities as men?)</p>			
Constraints to agricultural production- last five years		Opportunities	

Appendix C: Community Meeting Instrument (continued)

5. Focusing on seed *per se*, are there any concerns/constraints you want to signal (and specify the crop)

Crop	Concerns tied to production (seeds)?	Concerns tied to storage?	Other?

PART II. STRATEGIES FOR OBTAINING SEED: MAPPING OF SEED SOURCES (THIS IS THE HEART OF THE INTERVIEW)

6. For each of the major three crops, please MAP major seed sources used by the community.
(see separate seed mapping guide)

A. Map the seed sources for this current/most recent season : (specify season/year intense discussion)

Subjects to discuss:

- What main sources for seed (and **rank in importance**) 1= most important; 2= second in importance, 3= third in importance

B. Map the seed sources as they were 5 years ago (specify year).

C. Compare the current seed sources with those five years ago.

- What have been the major changes in the last 5 years?
- Why have they occurred?
- Are they positive or negative changes?

D. Compare among the different seed sources (e.g. home, neighbor, local market, agro-dealer)

- What are the advantages and disadvantages of using different sources?
- What is the quality of seed from different sources (including varieties)
- Is seed always available from the difference sources

PART III. UPCOMING SEASON: COMMUNITY EVALUATION OF THE FUNCTIONING OF SEED CHANNLES

7. For each major crop, indicate if the major channels used can still supply seed (Y/N) and indicate: normal, less, more than usual)
(fill in only those that are relevant—record key comments

Crop	Own stocks/social networks	Local market	Agro-dealers/stockists	Other

8. For each major crop- indicate cost of seed (main market used)- 'now'—and last season/comparable time

Crop	Price/unit 'now'	Price/unit last season, comparable period

Appendix C: Community Meeting Instrument (continued)

PART IV: COMMUNITY ASSESSMENT OF SEED SECURITY AND INSECURITY			
Seed security means that a household has the seed it needs (in house stocks / harvest) or that it can get the seed it needs , for example, through purchase or barter.			
9. In this community (specify bounds of community): what proportion of households would be considered potentially SEED SECURE (that is, they have enough seed already OR they can get it . Go crop by crop, for the three important crops grown.			
CROP	Out of 100 households, how many grow the crop?	Out of those who grow the crop, how many will be secure this upcoming season?	% who are seed secure
10. For those who are seed insecure... what might families do (or the community do) do to relieve seed insecurity (go crop by crop)			
Crop	Actions to relieve seed insecurity for those in need		
PART V. INNOVATIONS			
11. What types of positive innovations are taking place in your community—related to farming or to seed security			
Innovation	Yes/No	Describe	
Are there community-based seed related enterprises or other seed-producers?			
Are there any agro-enterprises in the area? (or plans for agro-enterprises?)			
Are there any new farmers' associations? women's groups developing activities?			
Are there any new agricultural management techniques being introduced (e.g. seed storage techniques?)			
Other?			
THANK YOU, THAT IS ALL. MIGHT YOU HAVE QUESTIONS FOR US?			

Appendix D: Reasons Farmers Gave for Planting Less or More Than Normal

Meher

Less Than Normal

More Than Normal

Reasons	N	% of responses	Reasons	N	% of responses
SEED-RELATED (or indirectly linked to seeds)			SEED-RELATED (or indirectly linked to seeds)		
<i>Seed availability</i>			<i>Seed availability</i>		
No seed available in market	9	3.2%	More seed available due to good harvest	19	8.4%
No seed/cuttings available from neighbors	2	0.7%	More seed available due to free seed	53	23.3%
<i>Seed access</i>			<i>Seed access</i>		
No money to buy seed/poor finances or seed prices too high	74	26.4%	More money to buy seed or seed price low	3	1.3%
<i>Seed quality</i>			<i>Seed quality</i>		
Seed available is not good quality or the variety is not liked	6	2.1%	Got credit to buy seed	0	0.0%
Sub-total: seed-related	91	32.5%	Have especially good seed or good variety	11	4.8%
NON-SEED FACTORS OF PRODUCTION (limits)			Sub-total: seed-related		
No/insufficient labor	9	3.2%	86	37.9%	
Illness/health problems	10	3.6%	NON-SEED FACTORS OF PRODUCTION (opportunities)		
No/insufficient land or land not appropriate/sufficiently fertile	47	16.8%	Good/increased labor	9	4.0%
Lack of tools/tractor/ other machinery to farm	8	2.9%	Feeling strong/healthy	3	1.3%
Plant pests/diseases make production not possible	7	2.5%	Have more land/more fertile land	24	10.6%
Animals/predator make production not possible	0	0.0%	Have tools/tractor, other machinery to help farm	8	3.5%
Lack of other inputs: controlled water supply/irrigation or fertilizer	2	0.7%	Have access to irrigation, fertilizer or other inputs (for example, stakes)	2	0.9%
Poor weather/rainfall	60	21.4%	Good weather/rainfall	43	18.9%
Insecurity (e.g. theft)	0	0.0%	Good security (peace has arrived; less theft)	1	0.4%
Sub-total: Factors of Production	143	51.1%	Sub-total: Factors of Production	90	39.6%
OTHER PRIORITIES/STRATEGIES			OTHER PRIORITIES/STRATEGIES		
Markets for crop or crop products not well-developed	2	0.7%	Well-developed /new markets for crop or crop products	14	6.2%
Other priorities than agriculture (e.g. have shop)	0	0.0%	Have decided to give more priority to agriculture	10	4.4%
Changing Crop priorities or changing agricultural practices	0	0.0%	Changed crop profiles or priority to certain crops	0	0.0%
Other	39	13.9%	Other	18	7.9%
TOTAL	280	98.2%	TOTAL	227	96.0%

Appendix D: Reasons Farmers Gave for Planting Less or More Than Normal (continued)

Belg

Less than Normal

More Than Normal

Reasons	N	% of responses	Reasons	N	% of responses
SEED- RELATED (or indirectly linked to seeds)			SEED- RELATED (or indirectly linked to seeds)		
<i>Seed availability</i>			<i>Seed availability</i>		
No seed available in market	1	0.8%	More seed available due to good harvest	9	11.0%
No seed/cuttings available from neighbors	1	0.8%	More seed available due to free seed	15	18.3%
<i>Seed access</i>			<i>Seed access</i>		
No money to buy seed/poor finances or seed too high	11	9.0%	More money to buy seed or seed price low	4	4.9%
<i>Seed quality</i>			<i>Seed quality</i>		
Seed available is not good quality or the variety is not liked	7	5.7%	Got credit to buy seed	0	
Sub-total: seed-related	20	16.4%	Have especially good seed or good variety	1	1.2%
NON-SEED FACTORS OF PRODUCTION (limits)			NON-SEED FACTORS OF PRODUCTION (opportunities)		
No/insufficient labor	3	2.5%	Good/increased labor	0	
Illness/health problems	5	4.1%	Feeling strong/healthy	1	1.2%
No/insufficient land or land not appropriate/sufficiently fertile	25	20.5%	Have more land/more fertile land	12	14.6%
Lack of tools/tractor/ other machinery to farm	5	4.1%	Have tools/tractor, other machinery to help farm	0	
Plant pests/diseases make production not possible	4	3.3%	Have access to irrigation, fertilizer or other inputs (for example, stakes)	0	
Animals/predator make production not possible	1	0.8%	Good weather/rainfall	19	23.2%
Lack of other inputs: controlled water supply/irrigation or fertilizer	0	0.0%	Good security (peace has arrived; less theft)	0	
Poor weather/rainfall	49	40.2%	Sub-total: Factors of Production	32	39.0%
Insecurity (e.g. theft)	0	0.0%	OTHER PRIORITIES/STRATEGIES		
Sub-total: Factors of Production	92	75.4%	Well-developed /new markets for crop or crop products	7	8.5%
OTHER PRIORITIES/STRATEGIES			OTHER PRIORITIES/STRATEGIES		
Markets for crop or crop products not well-developed	0	0.0%	Have decided to give more priority to agriculture	1	1.2%
Other priorities than agriculture (e.g. have shop)	9	7.4%	Changed crop profiles or priority to certain crops	0	
Changing Crop priorities or changing agricultural practices	0	0.0%	Other	2	2.4%
Other	0	0.0%	TOTAL	82	86.6%
TOTAL	122	99.2%	TOTAL	82	86.6%

Note: Where changes in sowing quantities are concerned, the concept of a subjective ‘normal’ baseline has methodological trade-offs. On the one hand, it is not quantitatively precise, since households have shifting, and often ambiguous, conceptions of what is normal. On the other hand, the subjective normal baseline emphasizes an emic, inductive focus on perceived sowing challenges/opportunities.

Appendix E: Differences in Seed Aid Uses by Gender of Household Head

Meher

	Proportion of Seed Aid Planted	Proportion of Seed Aid Eaten	Proportion of Seed Aid Exchanged/Sold	Proportion of Seed Aid Stored
N	376	376	376	376
Test Statistic (Independent-Samples Mann-Whitney U)	10,685.000	10,546.000	10,829.000	10,413.000
Sig.	.854	.902	.101	.625
* p<.05; ** p<.01; *** p<.0005				

Belg

	Proportion of Seed Aid Planted	Proportion of Seed Aid Eaten	Proportion of Seed Aid Exchanged/Sold	Proportion of Seed Aid Stored
N	70	70	70	70
Test Statistic (Independent-Samples Mann-Whitney U)	390.500	325.000	370.500	401.000
Sig.	.656	.187	1.000	.343
* p<.05; ** p<.01; *** p<.0005				

Appendix F: Differences in Seed Aid Uses by Age of Household Head

Meher

	Proportion of Seed Aid Planted	Proportion of Seed Aid Eaten	Proportion of Seed Aid Exchanged/S old	Proportion of Seed Aid Stored
N	373	373	373	373
Test Statistic (Independent-Samples Kruskal-Wallis)	10.119	17.801	7.938	3.744
DF	7	7	7	7
Sig.	.182	.013*	.338	.809
* p<.05; ** p<.01; *** p<.0005				

Belg

	Proportion of Seed Aid Planted	Proportion of Seed Aid Eaten	Proportion of Seed Aid Exchanged/S old	Proportion of Seed Aid Stored
N	69	69	69	69
Test Statistic (Independent-Samples Kruskal-Wallis)	6	6	6	6
DF	4.543	3.225	.000	6.189
Sig.	.604	.780	1.000	.402
* p<.05; ** p<.01; *** p<.0005				

Appendix G: Differences in Seed Aid Uses by Land Area Cultivated

Meher

	Proportion of Seed Aid Planted	Proportion of Seed Aid Eaten	Proportion of Seed Aid Exchanged/Sold	Proportion of Seed Aid Stored
N	375	375	375	375
Test Statistic (Independent-Samples Mann-Whitney U)	1.097	2.639	1.099	2.819
DF	3	3	3	3
Sig.	.778	.451	.777	.420
* p<.05; ** p<.01; *** p<.0005				

Belg

	Proportion of Seed Aid Planted	Proportion of Seed Aid Eaten	Proportion of Seed Aid Exchanged/Sold	Proportion of Seed Aid Stored
N	70	70	70	70
Test Statistic (Independent-Samples Mann-Whitney U)	.409	3.696	.000	5.357
DF	3	3	3	3
Sig.	.938	.296	1.000	.147
* p<.05; ** p<.01; *** p<.0005				

Appendix H: Differences in Proportion of Seed Sown Derived from Seed Aid
by Gender of Household Head

Meher

N	399
Test Statistic (Mann-Whitney U)	12,785.500
Sig.	.477
* p<.05; ** p<.01; *** p<.0005	

Belg

N	231
Test Statistic (Mann-Whitney U)	3,463.000
Sig.	.539
* p<.05; ** p<.01; *** p<.0005	

Appendix I: Differences in Proportion of Seed Sown

Derived from Seed Aid by Age of Household Head

Meher

	Proportion of Seed Sown Derived from Seed Aid
N	395
Test Statistic (Independent-Samples Kruskal-Wallis)	7.426
DF	7
Sig.	.386
* p<.05; ** p<.01; *** p<.0005	

Belg

	Proportion of Seed Sown Derived from Seed Aid
N	227
Test Statistic (Independent-Samples Kruskal-Wallis)	10.968
DF	7
Sig.	.140
* p<.05; ** p<.01; *** p<.0005	

Curriculum Vita
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Education

Ph.D. in Rural Sociology & International Agriculture and Development
The Pennsylvania State University
December 2018 (*expected*)

M.Ed. in Community Development and Action
Vanderbilt University
2013

B.A. in Community Development
Covenant College
2009

Professional Experience

Center for Strategic and International Studies
Research Fellow, Global Food Security Project
August 2018 – Present
Conduct field and desk research and produce analytical commentaries, briefs, and reports on critical issues in global food security.

Catholic Relief Services
Consultant
2015 – 2017 (24 months)
Assisted in the design, implementation, and analysis of Seed System Security Assessments (SSSAs) in Ethiopia, Burundi, DRC, and Zimbabwe.

Penn State Interinstitutional Center for Indigenous Knowledge
Managing Editor
2015 – 2016 (14 months)
Oversaw all aspects of manuscript review process, from submission to layout for Center's peer-reviewed journal, *IK: Other Ways of Knowing*.