COUNTRY STUDY

OF ANTHROPOLOGICAL GENDER AND (WHEAT-BASED) LIVELIHOOD LITERATURE

ETHIOPIA

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Abstract

This review provides a synthesis of the literature on the links between gender and social relationships, livelihood choices, and wheat-based systems in Ethiopia. It collates evidence from several different fields (this includes, among others, anthropology, feminist economics, cultural geography, international development, environmental studies, and agricultural sciences) and reads the available data through an anthropological lens. The current research literature on gender in agriculture has notable gaps, specifically in terms of farmers' own voices, perspectives, and lived experiences in relation to food and crop choices.

The introduction discusses these literature gaps. It begins by describing the policy approaches for agricultural transformation that have dominated the Ethiopian development trajectory, with a special focus on agricultural extension services. Next it discusses the Green Revolution approach to wheat productivity and production vis-a-vis the farmers' preferences for landrace over improved wheat varieties. Finally, it highlights the biased perception of women as "non-productive," which results in their contributions to agricultural food production becoming marginalized and invisible.

Following the introduction is an annotated bibliography, which includes the sections: (a) The Political Economy of Development; (b) Farmers' Knowledge, Indigenous Adaptations; (c) Gender Bias, Gender Blindness; and (d) Seeds of Diversity.

The existing literature points to a persistent, positive correlation between women's (and by extension children's) nutritional status and women's decision-making autonomy. Moreover, the normative division of activities, according to which men dominate field activities and women home affairs, is contradicted by the limited yet highly relevant ethnographic evidence that reveals how in practice women exert "soft" power in decision-making and, specifically, in saving, classifying, storing, and sharing seeds. Households headed by women or households with more female labor are found to grow more diverse crop varieties. This literature review substantiates the, so far neglected by the research literature, link between women and on-farm crop genetic diversity and suggests that women are traditional seed experts. Modern farming marketing practices overlook the role of women by targeting and selling to men. Furthermore, markets seem not to value the crop traits that farmers, and especially women in their home uses, prefer as consumers.

If gender is a relevant category that affects the adoption of wheat varieties and perceptions of their traits, then more research is needed to elucidate the extent of "gendered" influences on matters of food security, nutrition, and crop/livelihood choices. For instance, how is diversity managed in traditional small-scale farms; and how are the responsibilities and decision-making shared by men and women? In order to specifically capture the point of view of women farmers, the literature needs to move from only thinking in terms of formal markets to also considering informal social networks, home gardens and kitchens, and other "informal" aspects. Similarly, broadening the perspective from food production and productivity to food preparation, consumption, and preferences may reveal women's soft power and its influence over the small-scale farming system. Categories such as taste—that is, qualitative/subjective traits such as gustation, olfaction, feel, and appearance—may also need to be considered in breeding projects and agricultural research. Women's preferences, roles, and gender relations, along with ecology and the agricultural landscape, are overlooked

in agricultural research and policy development, to the detriment of local livelihoods and food security.

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1. Introduction

The aim of this literature review is to investigate social relationships in wheat-growing regions of Ethiopia. Key research questions being addressed are:

- How does the world look, and work, for males and females in wheat-growing households?
- What do we know about social relationships and mediating processes[1] that exist in the prime wheat-growing regions in Ethiopia?
- How do gender relations shape livelihood choices, including nutrition, food security, and agriculture?

In order to deliver answers to these questions, a desk-based review of literature (both peer-reviewed and secondary/gray/unpublished) was conducted using databases Google Scholar, ProQuest, JSTOR, SAGE Journals, Taylor & Francis Online, and Wiley Online Library. The search terms used in combination with "Ethiopia," "gender," and "wheat" were:

agronomic strategies
climate change
consumption
crop choice
crop diversity
environment
equity
family farms
food preferences
food security cuisine
food ways
landscape
lived experience
livelihood
marginalization
nutrition
political ecology
poverty
rural women
sustainable development
traditional farming

The initial purpose of mining databases/journals/websites that were entirely or mainly "anthropological" had to be revised and expanded in order to extract as much high-quality data as possible and to answer the research questions (e.g., what is the lived experience of households that have a wheat-based livelihood?). The majority of the available data has in fact come from several different fields, including (among others) feminist economics, cultural geography, international development, environmental studies, and agricultural sciences. The type of data that this literature review presents is designed to illustrate to the reader, at least in part, what is missing in the current research on gender in agriculture. In order to learn more about gender relations and livelihood choices it has therefore been necessary to read what is currently available through an anthropological lens, despite the non-anthropological nature of some of the original data. The gaps have turned out to be as telling as the literature itself.

1.1. An Agrarian Nation on the Brink of Poverty

Ethiopia is the second-most populous country in Africa. It is also a highly diverse nation, both ethnically and agro-ecologically. More than 80 ethnic/linguistic groups, practicing a wide variety of cropping and settlement patterns, inhabit the country. These communities have developed various uses for their crop genetic resources, as expressed in their rich

[1] Mediating processes are formal and informal organizations and institutions with "regularised practices (or patterns of behavior) structured by rules and norms of societies which have persistent and widespread use" (Scoones 1998, 12).

cultural and culinary traditions. The country's population is concentrated in the highlands, with the lowlands being sparsely populated due to the prevalence of malaria and other vector-borne diseases, as well as for other geographical, historical, and socio-economic reasons.

Ethiopia also remains an agrarian nation. In the highlands, mixed farming (grain and livestock) is prevalent, whereas in the peripheral lowland regions pastoral production is the major source of livelihood. Agriculture is the mainstay of the Ethiopian economy. The agricultural sector accounts for about 40% of national GDP, 90% of exports, and 85% of employment.

Ethiopian agriculture largely follows a pattern of low external inputs (i.e., low usage rates for fertilizer, improved seed varieties, and irrigation) and is mostly rain-fed. Therefore, rainfall is a very critical factor in both determining crop yields and shaping farmers' crop species choices. Ethiopia has experienced at least five major droughts since 1980, along with several other sporadic droughts. Cycles of drought create poverty traps for many households, constantly thwarting efforts to build up assets and increase income. Between 1999 and 2004 more than half of all households in the country experienced at least one major drought shock. Poverty levels are high in Ethiopia, which was ranked 174th out of 187 countries based on its 2015 Human Development Index score, and many people within Ethiopia remain dependent on some kind of food aid.

Despite high levels of poverty, in recent years the Ethiopian economy has become one of the fastest growing in the world. The development story of Ethiopia has been nonetheless a much-debated topic, one that needs to be addressed through a critical lens, combining official data with the perspectives and remarks of different stakeholders.[2] The literature shows that a number of characteristics of the Ethiopian state have remained remarkably persistent over time; these include a tendency towards authoritarianism, hierarchy, centralized rule, and lack of transparency. These traits arguably translate into bureaucratic cultures that are antithetical to bottom-up or decentralized practices. This has not only contributed to the prevalence in Ethiopia of top-down approaches to agricultural extension and natural resource management, but it has also led to a somewhat tenuous relationship between agricultural extension agents and farmers (Pausewang 1988; Woldegiorgis 2014). Statistics and ethnographic evidence show very clearly that while farmer preferences in general receive very limited attention the preferences of women farmers receive even less (Buchy and Basaznew 2005; Pankhurst 1992).

The country's agricultural performance has been extremely modest. In an effort to meet the challenges facing the agricultural sector and achieve faster agricultural growth and food security, the Ethiopian government launched a new development strategy called Agricultural Development-Led Industrialization (ADLI) in 1991, which sought to emphasize the commercialization of agriculture. The Growth and Transformation Plan (GTP) is the latest in this series of development plans to be produced by the government, and it continues this emphasis on agricultural commercialization. The core goal of all these strategies has been to increase yields through a centralized extension-based service focusing on technological packages that combine credit, fertilizers, and improved seed varieties with better

[2] Regional differences within Ethiopia appear to be particularly important in understanding policy processes. As this literature review shows, a range of factors contribute to these regional differences, including political histories and settings, mechanisms of bureaucratic control, levels of capacity in government, and commitments to participatory forms of governance. However, not everything matters equally. Exploring the relationship between regional areas and the cities is therefore important to understanding the policy-making process. Hence the need to undertake more studies on the political economy of development in order to understand how policies surrounding agriculture, natural resources, and the environment get established (Keeley and Scoones 2000).

management practices (Alemu 2011; Benin et al. 2004; Shiferaw et al. 2014; Teshome and Abate 2013). While far-reaching in their intent, these government programs could benefit from moving toward a more people-centered approach and to addressing some of the imbalances flagged in the literature. This might be achieved, for example, by moving extension policies from a top-down model to more integrated, collaborative, and participatory experiments; mandating extension workers to render equal services to both male and female farmers; and initiating programs that target women farmers in equal proportion to male farmers (Berhanu and Poulton 2014; Henry et al. 2016; Segers et al. 2009; Woldegiorgis 2014).

The literature reveals that there are two existing approaches (and several nuances in between them) that development policies for agricultural transformation in Ethiopia have so far taken. One approach has been defined as "aggressive technology transfer" insofar as it relies on aggressively increasing access to, and use of, modern crop varieties to tackle food insecurity. This approach has been central to a number of key policy documents, most notably the government's Food Security Strategy. This document has now become the template for the development of regional strategies and for discussions with donors, invoking ostensibly technical interventions as a way of reordering rural social spaces and livelihoods. It has been noted that, as a consequence of this,

> studies of extension in Ethiopia emphasize its top-down approach. Agents receive relatively hard quotas for enrolling farmers in technology packages, and supervisors evaluate their performance against these quotas. Extension also works through model or "progressive" farmers, who tend to be better off and male. These farmers are selected based on their success in agriculture, receive a higher level of extension service, and are expected to pass on advice to other farmers in their community. Extension communication is mostly one-way, with agents transferring knowledge to farmers; there is little effort to marry new agricultural research and development to farmers' own knowledge, or to learn what kinds of services farmers would like to receive. (Cohen and Lemma 2010, 484)

At the other end of the spectrum, a new perspective has emerged that relies more on an integrated, conservation farming approach. This is built around a local actor-network framework and leads to collaborative research projects, explicitly or implicitly setting out to test alternatives to the top down Sasakawa-Global 2000 approach.[3] In a local actor-oriented approach, intervention is viewed as an ongoing, socially constructed and negotiated process, not simply the execution of an already-specified plan of action with expected outcomes. Such a position situates the discussion of agricultural production and environmental conservation within an understanding of rural livelihoods, arguing that technical solutions to either food shortage or environmental degradation have had limited success. It emphasizes that solutions must be based on a detailed understanding of local contexts, drawing on indigenous knowledge and technical practices, thus, acquiring a more detailed understanding of "the problem" of low productivity before solutions or technical fixes are planned. Integrated solutions are favored, including a focus on linking agricultural production with conservation and encouraging the management of resources through community involvement. Top-down

[3] Since 1991, the fertilizer package approach has been vigorously pursued by the Ministry of Agriculture with assistance from the international non-governmental organization Sasakawa-Global 2000, with plans to boost fertilizer consumption to 400,000 tonnes per annum. The program has been a major proponent of high external-input technologies (HEIT). It has provided credit, inputs, and extension assistance to participants willing to establish half-hectare demonstration plots on their own land. In Ethiopia, former prime minister Meles Zenawi took a personal interest in Sasakawa-Global, and the Ministry of Agriculture used these principles as the model for its New Extension Program to promote HEIT for maize, teff, sorghum, and pulses.

solutions and large campaign-style approaches are therefore rejected in support of more participatory solutions involving local consultation and village-level planning.

These two approaches have resulted in contrasting views among academia. Some regard the promotion of Green Revolution technologies in the marginal areas of the country as the only way of boosting food production and solving recurrent food crises; some, on the other hand, think that more integrated, low external-input solutions based on the principles of conservation agriculture are more appropriate for dealing with the dual problems of environmental degradation and food shortage in the longer term. So far, political attention has been focused on increasing economic growth and food security through improved agricultural productivity, with improved seed varieties playing a central role in that agenda. Yet the literature shows that this is not just a technical agenda—about new seeds and delivery systems—but one that is fundamentally linked to issues of national political economy and, as such, worthy of debate beyond the narrow confines of technical-economic assessments.

The reinstatement of anthropological concepts may bring new and valuable insights to an arena currently dominated by grand schemes and fraught with opposing, sometimes sharply so, ideological points of view. Anthropological methods are especially well-suited to address these knowledge gaps because they integrate qualitative data and local forms of knowledge and place emphasis on the socio-political dimensions of hunger, poverty, food, and environmental crises. A meaningful discussion regarding wheat, household food security, and livelihood choices would benefit enormously from the collection of local views on food, notions of healthy eating, dietary needs, and (agri-) cultural change. Yet despite the emphasis of social sciences on the importance of indigenous ecological perceptions, the evidence to date is that Ethiopian farmers have received scant attention as agronomic actors in the internationally available literature on hunger and food-nutrition security, especially within the scientific policy narrative (Peveri 2016a).

1.2. Wheat and Food Security from a Farmer's Point of View

In Ethiopia, wheat is consumed in several different forms, such as leavened bread, pancakes, macaroni and spaghetti, biscuits, and pastries. The most common Ethiopian preparations are *dabo* and *ambasha* (homemade bread from northern Ethiopia), *kitta* (unleavened bread), *injera* (thin bread prepared mainly from teff), *nifro* (boiled whole grains, sometimes mixed with pulses), *kolo* (roasted whole grains), *dabo-kolo* (ground and seasoned dough, shaped and deep-fried), and *kinche* (crushed kernels, cooked with milk or water and mixed with spiced butter).

Durum wheat (*Triticum durum*) and bread wheat (*T. aestivum* L.) varieties are grown in Ethiopia in nearly equal proportions. The durum wheat landraces are recognized among farmers as *nebar zer* ("seed that has been there all the time") or *abat zer* ("fathers' seed"), signifying that they have been passed down from their forefathers. The term *nebar zer* is used to distinguish landraces that have been under cultivation since ancient times from the newly introduced wheat varieties supplied through the formal state seed system. The latter, including both improved bread and durum wheat varieties, are known by the collective name *mirt zer sinde* ("select seed of wheat").

There have been notable changes in dietary patterns and a rapid growth in wheat consumption over the past few decades in several countries in sub-Saharan Africa. Rapid growth in wheat consumption in eastern and southern Africa has been attributed to urbanization, rising incomes, and dietary diversification. While many countries in Africa are largely dependent on imports to meet their growing demand for wheat, Ethiopia is one

country where smallholder wheat production is prominent, allowing it to meet more than 70% of its demand from domestic production. Wheat and wheat products represent 14% of the total caloric intake in Ethiopia, making wheat the second-most important food crop, behind maize (19%) and ahead of teff, sorghum, and enset (10%–12% each). With respect to total area cultivated, wheat is the fourth-most widely grown crop after teff, maize, and sorghum. In terms of gross value of production, wheat is ranked fourth or fifth (approximately tied with sorghum) after teff, enset, and maize and. Unlike other staple grains, wheat is imported in large volumes. The percentage of domestic wheat consumption coming from imports varies between 25% and 35%, depending on the size of the harvest and other factors. Ethiopia ranks second in sub-Saharan Africa in total wheat area and production. Wheat is mainly cultivated in the southeastern, central, and northwestern Ethiopian Highlands at altitudes ranging from 1,500 to 2,800 meters, primarily under rain-fed conditions (Minot et al. 2015).

According to advocates for the Green Revolution approach, the above statistics indicate the critical importance of boosting wheat productivity and production through the generation and development of improved wheat technologies, the aim being to promote broad-based economic growth and poverty reduction in Ethiopia. Over the last several years, the International Maize and Wheat Improvement Center (known by its Spanish initialism, CIMMYT) has been collaborating with the Ethiopian Institute of Agricultural Research (EIAR) in the development and dissemination of improved wheat varieties. Although the literature on the adoption and impact of crop technologies is extensive, most studies have looked at the impact of crops other than wheat (maize, groundnuts, pigeon peas, and rice) on agricultural productivity and household welfare. Much less is known about the welfare impact of wheat technology at the farm household level.

If we compare the metric-based/calculative approach to wheat production with that of farmers', the evidence shows that food security and smallholder's empowerment are not only about increasing yields, raising productivity, and achieving scale. The landscape of a farmer involved in maintaining a wheat-based livelihood encompasses much more than the existing research has explored.

The Ethiopian Highlands are considered a center of diversity for wheat, which has been cultivated in this region for several millennia, with little change in farm implements and farming practices among smallholder farmers (Nelson 2013, 11–12). Ethnographic research conducted in 2010 found that farmers in Arsi, Oromia Region grew 11 varieties of wheat in 2010. Some of them, especially women, showed a preference to revert to older, local, or obsolete varieties. The varieties that women were most interested in growing are known for their superior bread quality, their use in traditional dishes and homemade fermented beverages, and producing good straw for roof material. The varieties most preferred by men were the varieties with strong marketability and high yields (Nelson 2013, 60). In South Wollo, Amhara Region, farmers proved to have ample experiential knowledge about their local crops across and within species. A number of farmers were able to identify different seed diversities by weight, appearance, and even by hitting the wheat spike and hearing a particular sound; the classifying ability differed by farmers' gender and age (Yelemtu 2014, 107–13).

These examples show that farmers are accustomed to maintaining crop and variety diversity. Farmers assess and obtain varieties according to agronomic maturity, food quality, and stress- and disease-resisting ability, in addition to productivity. The adoption of familiar or unfamiliar varieties may not only be driven by risk management but also by consumption preferences and the desire to fulfill material as well nonmaterial needs (Cavatassi et al. 2011;

Yelemtu 2014, 132–36). Cultivating more diversity has enabled the country's small-scale, subsistence-oriented farmers to adjust to changing growing conditions, cope with emerging production constraints, and fulfil the diverse needs of home consumption and the market (Cavatassi et al. 2012; Di Falco et al. 2010; Tsegaye and Berg 2007, 220).

Farmers' reliance on crop biodiversity is very important in a challenging production environment. One of the key features of local farming practice, which has been reported in several studies, is the careful matching of crops and crop varieties to soil potential. Farmers are typically knowledgeable about the relationship between crops and soil types and are aware that some crops influence the productivity of certain types of soil. Most adult male farmers in Wolayta (in southern Ethiopia) could name up to eight different soil types, depending on whether they resided in a highland, midland, or lowland area (Dea and Scoones 2003, 467–70). In Tigray Region, farmers distinguished between crops that had a similar effect to fallowing and improve the soil, and crops that deplete the soil. They developed a local system of soil classification based on their experience of the potential constraints of their soils. They used their knowledge system to determine how they would manage soil fertility. Farmers in the region distinguished between four different soil types, mainly on the basis of soil color and texture (Corbeels et al. 2000, 14–15).

Farmers make decisions regarding the number of crops to be grown, thus determining the level of diversity existing in the farm. They consider crop biodiversity as one adaptation strategy in response to climatic changes (Rovin et al. 2013, 25). Whenever they have been asked, farmers have argued that more biodiversity delivers important payoffs in terms of production (Di Falco et al. 2010, 1700; Edwards et al. 2010; Reda 2014, 118–20). Growing multiple species makes it possible to exploit productive synergies between crops and niche partitioning.

This literature review shows that the country's seed resources are critical to the performance of agriculture. Crop diversification is an important initial step in the transition from subsistence to commercial agriculture, during which time farm households diversify from producing solely food crops to a wider range of commercial crops prior to their reaching a stage of specialization. Above all, the history of Ethiopia's seed resources is one born out of the accumulation of farm-level selection preferences for plants, food, and landscapes that chronicle the country's agrarian past (McCann 2011, 24–25). The agronomic strategies deployed by farmers in their respective micro-ecologies—created by specific arrays of elevation, soil, and rainfall shadow—has made Ethiopian agriculture a complex and resilient enterprise.[4] Ethiopian agriculture is characterized by a pronounced agro-ecological diversity, and, given that several different agro-ecologies can be found within a single district, technologies do not "travel far" (Cohen and Lemma 2010, 493). Hence, standardized development packages do not perform very well.

This calls for favoring seed varieties that better match the reality of farmers' lives and production systems; for taking into consideration the farmers' role as selectors of phenotypic traits they favor locally; and for understanding the local rationales for seed choices, choices that, for example, take account of market conditions, the environment, and risk aversion (McCann 2011, 33–34). Researchers and extension staff can help farmers improve their approach to experimentation and strengthen the farmers' capacity to systematize the learning process. This can be done by working to improve the planning and design of the experiments chosen by farmers. Researchers and extension staff can also assist farmers with their

[4] Farmers themselves incessantly conduct on-farm experiments as they go about their daily activities. These repertoires of knowledge may be considered "indigenous sciences," or "folk knowledge systems," or, again, "indigenous knowledge systems" that are not available in written texts but should be comprehended as a tangible form (Shigeta 1990, 94).

experimentation by providing technical backup and a better understanding of the biological processes underlying farmers' practices (Corbeels et al. 2000, 21).

An anthropological account conducted in South Wollo on the social life of seeds indicated, for example, that, despite concerns about vulnerability and high cost, most farmers were keen to grow high-yielding varieties to increase productivity while keeping local varieties for other needs (e.g., various feasts, and cultural and ritual practices). This resulted in tension and in the negotiations between farmers and development agencies/extension agents over which types of seeds would accommodate the varying economic and socio-cultural needs of farmers (Yelemtu 2014, 151). Development/extension agents who fail to consider that the old and new varieties may not be mutually exclusive alternatives, and that that local/landrace varieties may still have a place depending upon a range of considerations, including the relative importance of access to cash (through increased production and marketing), access to water supply, and the significance of retaining diversity as a way of offsetting the risk of failure. Neglecting or undermining traditional, informal ways of coping in such a diverse country may lead to a pattern of seed adoption that creates dependency and increased volatility and vulnerability.[5]

There is a need to balance competing needs: the need to be connected to the national economy while maintaining local peculiarities; a need to earn cash income from agricultural products without compromising household consumption needs and disturbing its social harmony. As rural communities become more integrated into the global market system, they require protection—the associated volatility can generate a breakdown of local structures and traditional practices that may place ecosystems, traditional coping mechanisms, and farmers under stress (Bevan and Joireman 1997). More research is therefore needed to examine the intended and unintended consequences of development strategies and their connection to the broader environment (Snyder and Cullen 2014). This should lead to technical interventions that are more tailored to the social and cultural contexts of implementation and adoption, which includes gender relations and other barriers to production.

1.3. Who Are the Farmers? Women at the Edges of Official Data

Although it is true that women in rural Ethiopia live in male-dominated societies, the degree of their rights greatly varies. Anthropologists who had been in the field for a considerable period of time began to discover areas in which women, at least briefly, were dominant (Pankhurst 1992; Peveri 2016b). Unless researchers appreciate these subtleties, their knowledge of gender relations in non-Western societies will remain partial. In addition to the dearth of ethnographic information that would permit cross-cultural comparisons, any effort to analyze changes over time will suffer from similar absences in the more general historical data on how societies operate, cultural mores, and gender relationships for Ethiopia and other African countries.

In Ethiopia, normative ideas of rural femininity and masculinity appear to justify what is deemed appropriate for women and men. In most areas studied, the division of labor between women and men follows rigid conceptions of gender norms, defining farming

[5] "The literature on development is riddled with such examples of unintended consequences and failed adoption of introduced technologies. The examples all share a common theme: the failure to adequately understand the local social and political context and a top-down approach to development. In line with neo-liberal ideology, there is an assumption that as long as the 'right' things are put in place, society will take care of itself.... There needs to be greater questioning of whether these expert visions are compatible with farmer realities and their own desires, as well as how they impact on individual households, the wider community and environment" (Snyder and Cullen 2014, 24).

knowledge and skills (i.e., productive activities) as the men's domain and reproductive and domestic activities as the women's domain. In most local languages the word 'farmer' is, by default, associated with 'he,' the notion being that women are 'weak farmers' if they are farmers at all. In grain-growing areas there exists a taboo against women plowing, regardless of their land ownership status. This gendered restriction on plowing is usually justified by referring to 'honor' and women's physical ability (Alesina et al. 2013; Gella and Tadele 2014; Pankhurst 1992, 75–101).

Much of the body of literature in this review reflects the fact that the right to decide on the types of crop to plant, crop timing, and how the farm is managed has been taken away from women. By contrast, men have the opportunity in the community to rent land, diversify their adaptation measures, and get additional income (Cafer et al. 2015, 67–69; Ogato et al. 2009). The gender disparity in access to inputs through extension services is notable. The extension services of agriculture departments in many parts of the world have systematically ignored women and, unfortunately, this is still the case in Ethiopia. Extension services traditionally build on the "transfer of technology" model and have, for a long time, reached only a very specific category of farmers, the 'innovators' as they are called, who would grasp with enthusiasm the opportunity of testing and adopting new technologies; in the process the 'laggers', those who were resistant to change, would be ignored. The concept of extension is still very much technocentric, being applied with little understanding of the needs and realities of poor and marginal farmers and making little space for gender and women's issues (Buchy and Basaznew 2005, 237).

Agricultural extension services still do not attach equal importance to providing services to women farmers or women on farms. Since agriculture extension workers often contact male farmers, the majority of women do not see extension services as being useful to them in terms of adaptation measures. The only extension service offered to/made available to rural women is training. However, the themes of this training reveal fundamental gender biases: training for women focuses on their reproductive and community roles (child care, sanitation and hygiene, health, family planning) at the expense of developing their farming skills, which reinforces local gender norms and the gendered division of labor (Buchy and Basaznew 2005, 244–45; Cohen and Lemma 2010, 485-489).

As a result of this biased approach (and perception), women's contributions to crop production are not just qualitatively but quantitatively invisible. Statistics on women's yields, women's technology adoption rates, and women's use of inputs are rarely reported. Ethiopian women contribute over 65% of total labor to crop production, storage and processing, a role that is effectively rendered invisible (Henry et al. 2016, 81).

Nevertheless, this literature review identifies a potential, highly promising entry point into women's worldview and agency, one in which women's choices are decisive and articulate. There is evidence that households have certain preferences for producing certain kinds of wheat. In general, it seems that women's preferences for wheat varieties differ from those of men: women usually prefer to produce crops that are mainly used for domestic consumption, whereas men opt for crop varieties that have a high market demand and price. In regions where wheat varieties are priority commodities—where wheat is perceived as being or becoming a cash crop—men prefer to produce the improved varieties while women prefer local varieties that are more suitable for household use (Aregu et al. 2011:15–16; Nelson 2013, 58–61). Many communities heavily reliant on cash crop production often face seasonal food insecurity. The fact that this affects communities in different corners of the country highlights how a high cash income from a specific agricultural product does not necessarily guarantee a sustainable food supply for home consumption. Though the switch by many

farmers to cash crops as an income diversification strategy may increase household resilience to shocks, reliance solely on cash crops has the potential to decrease household food security, because these resources are rarely controlled by women (Cafer et al. 2015, 65; Debsu 2009, 20; Freeman 2015, 163–67; Hamer and Hamer 1994; Hebo 2014; Ogato et al. 2009; Snyder and Cullen 2014, 23–24).

If gender is thought to be an important factor affecting the perceptions of wheat traits and subsequent adoption of wheat varieties, examining only the gender of the head of household addresses just one component of the many gender-linked barriers to technology adoption.[6] Men and women often have different responsibilities with regard to farming, family nutrition, and off-farm income, which may result in differing preferences for traits in wheat varieties. The farmer's gender dictates management and usage since these depend on the variety grown, which is itself a product of decision-making that is inherently gendered.

Farmers in most areas of the country are still using their own varieties (the *nebar zer*, or landraces), which have been selected by them in an environment where overall soil fertility is more important than just the amounts of the two major nutrients, nitrogen and phosphorus, supplied by chemical fertilizer (Edwards et al. 2010, 271). Although landraces were developed by farmers for subsistence, they possess a potential for maximizing yields under the adverse growing conditions that prevail in Ethiopia. Therefore, it is essential that scientists work with farmers, both men and women, to exploit this potential for the benefit of the whole farming community. Care must be taken to find a reasonable balance between these two approaches—the use of high external-input technology and that of indigenous landrace seeds.

There is significant potential to increase production on small-scale farms with improved technology such as disease resistant varieties, soil fertility management, and weed control (Tesemma 1991). But, without addressing gender-specific constraints and preferences, the full potential may never be reached. If gender is thought to influence varietal acceptance, it becomes critical to analyze men's and women's perceived values for both pre- and post-harvest traits in wheat varieties. Post-harvest and cooking characteristics are rarely evaluated in breeding projects even though they are known to be important to women. Recent studies note that in order to reach women and the poor with plant breeding projects, there needs to be an emphasis on cultivar performance in intercropped systems, the importance of end-use products as food for humans and fodder for animals, what time in the growing season the crop matures, labor demand characteristics, post-harvest processing concerns, and culinary dimensions (Nelson 2013, 15–18).

[6] Household economic surveys usually do not record information about households in a wider social context. In interviewing the "head of the household," are likely to capture a male-biased perspective. Moreover, household composition can be very fluid, with the age of the respondent influencing gender roles and relationships. Household members may have common but also sometimes competing interests.

2. Annotated Bibliography

2.1. The political economy of development

Bekele, G. 2009. "Food Matters: The Place of Development in Building the Postwar Ethiopian State, 1941–1974." ***International Journal of African Historical Studies*** **42(1): 29–54.**

This study attempts to understand Ethiopia's development history by focusing on the three and a half decades that followed the short-lived Italian occupation of the country (1936–41). What circumstances made and sustained development as a relevant theme in Ethiopian history? Why has the development concept changed over time, and how important was it in mediating power relations in postwar Ethiopia? This article maintains that, from the very beginning, the notion of "development" offered Ethiopia's postwar regimes a viable platform for consolidating power in a polity that was undergoing constant change and transformation.

The author demonstrates that the most enduring theme in Haile Selassie's thinking about development has been food, which for Haile Selassie had a pragmatic relevance both in social and political terms as he struggled to build a national state in the Horn of Africa amidst the ruins of an Italian empire. As early as 1945, Haile Selassie embarked on his efforts at institution building. One of his strongest allies in that endeavor was the Food and Agricultural Organization (FAO) of the United Nations. A renewed phase of Haile Selassie's developmentalism began when the export market dried up in 1956. This phase focused on marketing structures, field technology, and seed quality, revealing a state policy that was inherently biased against the development of smallholder agriculture. At the same time, the world of agricultural development was excited about Indian farmers' success in the area of maximizing food production. The Indian experience was potent enough to convince many skeptics that the key to eradicating hunger around the world was to be found in Green Revolution technologies. Dubbed "maximum intervention," the 1956 new program of Haile Selassie was capital-intensive by design. To that end, in a span of just three to four years the government brokered partnerships with a number of Western countries and international donor agencies.

The political situation that prevailed in the country following the end of military rule in May 1991 connects the pre-Derg food-based policies of Haile Selassie's regime (1930 - 1974) to what came after the military regime was ousted. Sharply rising rates of inflation in the food market and the government's approach to tackling poverty alleviation grew out of the tense political environment precipitated by the controversial May 2005 elections. Now as before, the author argues, food and development politics will continue to be vital and volatile subjects in the evolution of the Ethiopian state and society for the foreseeable future.

Alemu, D. 2011. "The Political Economy of Ethiopian Cereal Seed Systems: State Control, Market Liberalization and Decentralization." ***IDS Bulletin*** **42(4): 69–77.**

This article explores the political and economic processes governing Ethiopian cereal seed systems. By contrast with other countries in Africa, Ethiopia is highly reliant on informal seed provision and local varieties. The formal seed system, on the other hand, is a system that involves the production and distribution of basic seed and certified seed by public enterprises and private companies. Seed policy is also influenced by donors who are

interested in strengthening the national seed system through different programs. A central strand of current policy thinking is the push to "modernize" the seed system, encouraging uptake of new varieties as part of a strengthening of the formal seed system. The narrative on crop productivity and seed supply gaps therefore frames policy debates, driving policy makers to focus on modernization and formalization of the seed system as part of the overall Growth and Transformation Plan (GTP).

The analysis is based on information generated from secondary data sources and primary key informant interviews from a diverse group of actors in the system, including farmers and researchers, as well as experts at the Ethiopian Seed Enterprise (ESE) and regional seed enterprises, the Ministry of Agriculture and Rural Development (MoARD)[7], and the Bureau of Agriculture and Rural Development (BoARD).

A series of economic and political drivers were identified, including top-down, state-driven initiatives; agricultural liberalization and the private sector; and political-administrative decentralization; all of which pull in different directions in attempting to realize the Ethiopian Green Revolution. The author strongly argues that it is important for technocrats, politicians, and international donors and supporters to understand these political and economic drivers of change. By addressing these conflicts and contradictions they may improve the chances of designing and implementing more technically effective and socially appropriate policies. This will help establish a vibrant seed system that offers real choices for farmers in terms of seed type, quantity and quality, and delivery times at reasonable prices.

Berhanu, K., and Poulton, C. 2014. "The Political Economy of Agricultural Extension Policy in Ethiopia: Economic Growth and Political Control." ***Development Policy Review*** **32(2): 197–213.**

The Ethiopian agricultural extension program stands out as being the largest and fastest growing in the continent. Up to 2014 when the paper was published, the authors argue, is a situation of significant and sustained investment by the Ethiopian government in agricultural extension provision. This provision was made with the formally stated aim of stimulating broad-based agricultural growth—and there is some evidence of impact in this regard. Nonetheless, features of the Ethiopian extension system can also be read in terms of a second (and not publicly stated) objective, namely that of the "insecure" Ethiopian People's Revolutionary Democratic Front (EPRDF) to establish the control throughout what is a large and diverse country.

The article argues that, in Ethiopia, while broad-based agricultural growth is perceived as essential to raising the productivity of smallholder agriculture, it is also essential to the long-term survival of the current EPRDF government. It argues that investment in agricultural extension contributes to this secondary objective, by helping to secure political control across Ethiopia's large and diverse countryside, including mobilizing support around election time. The government is undoubtedly working hard to stimulate agricultural growth, but can its growth objectives be fully achieved while the political-control imperative is also still being pursued?

The authors discuss the political significance of agriculture within Ethiopia. They point out that state and (ruling) party structures are deeply intertwined, and therefore extension workers operate within a context that is not politically neutral. For instance, there are various

[7] The current Ministry of Agriculture and Natural Resource Management (MoANR) has changed names several times, including from MoARD.

allegations that, in their allocation of seeds, fertilizers, and credit, extension workers give priority to farmers loyal to the EPRDF; thus, access to agricultural inputs has become an instrument of political control and patronage.

The authors highlight the difficulties of creating the conditions for a dynamic, pluralistic, participatory, and demand-driven system when extension workers are also promoting an agenda of political control. Implications are drawn for wider debates on the reform of agricultural extension.

Shiferaw, B., Kassie, M., Jaleta, M., and Yirga, C. 2014. "Adoption of Improved Wheat Varieties and Impacts on Household Food Security in Ethiopia." *Food Policy* 44: 272–84.

This article evaluates the impact of the adoption of improved wheat varieties on food security. The data are based on a farm-household survey conducted during 2011 by the International Maize and Wheat Improvement Center (CIMMYT) in collaboration with the Ethiopian Institute of Agricultural Research (EIAR). The sampling frame covered eight major wheat-growing agro-ecological zones that accounted for over 85% of the national wheat area and production and were distributed within four major administrative regions. A total of 2,017 farm households were interviewed across 26 zones (provinces), 61 districts, and 122 *kebeles* (local councils).

The authors adopted an endogenous switching regression treatment effects approach complemented with binary propensity score matching to test robustness and reduce selection bias stemming from both observed and unobserved characteristics. They expanded this further with generalized propensity score matching to evaluate the effects of continuous treatment on the response of the outcome variables.

The article found that adoption of improved wheat varieties increased food security.

Tesemma, T. 1991. "Improvement of Indigenous Durum Wheat Landraces in Ethiopia." In *Plant Genetic Resources of Ethiopia*, edited by J.M.M. Engels, J.G. Hawkes, and M. Worede, 288–95. Cambridge: Cambridge University Press.

Wheat has been and continues to be one of the most important cereal crops in Ethiopia in terms of both area under cultivation and production. Durum wheat (*Triticum durum*) is by far the predominant species and occupies 60%–70% of the total area under cultivation, while bread wheat (*T. aestivum* L.) constitutes the remainder. Bread wheat, although of recent introduction, has a wider environmental adaptation than durum wheat, even though durum wheat is a traditional crop in Ethiopia. Nearly all the wheat varieties discussed Tesemma's 1991 chapter are landraces consisting of a large number of different genetic lines; different species even are often found growing as a mixture in the same field.

Although the Debre Zeit Agricultural Research Center was established in 1953, the emphasis on wheat improvement had, until 2016 been focused on exotic varieties. Work on indigenous landraces consisted mainly of making collections and maintaining the germplasm. In general, the loss of landrace genetic diversity is bound to accelerate with the release of high-yielding varieties from research stations, improvements in infrastructure, population increases, and the overall modernization of agriculture.

This article argues that the genetic variability in Ethiopian wheat varieties has tremendous potential that, if properly exploited, could be a vital source of germplasm, not only for

Ethiopia but also for the rest of the world. According to the author, the first step in breeding should be maximum utilization of indigenous landrace varieties because the dissemination of newly developed uniform varieties can be highly risky. Due to their narrow genetic base, uniform varieties are potentially vulnerable to diseases and pests that can cause extensive yield losses. Broad genetic variability is believed to have a buffering effect against the diverse production environments prevailing in Ethiopia. Therefore, incorporating desirable characteristics from the most promising exotic varieties into the best local varieties, keeping the most advantageous adaptations of the local varieties, should be the long-term objective of the durum wheat varietal development program.

Di Falco, S., and Veronesi, M. 2013. "How Can African Agriculture Adapt to Climate Change? A Counterfactual Analysis from Ethiopia." *Land Economics* 89(4): 743–66.

Through a multinomial endogenous switching regression model of climate change adaptation, and implementing a counterfactual analysis, this article analyzes the impact of different adaptation strategies on crop net revenues in the Nile basin of Ethiopia. The study relies on a survey conducted in 2004 and 2005. The final sample includes 941 farm households and 2,802 plots. Household data are combined with spatial climate data. One of the survey instruments was specifically designed to investigate farmers' perceptions of and adaptations to climate change.

In this study, the role of different adaptation strategies (e.g., changing crop varieties, water conservation strategies, and soil conservation strategies) were analyzed and compared to answer the following research questions: What are the factors affecting the adoption of strategies in isolation or in combination? What are the "best" strategies that can be implemented to deal with climatic change in the field? What are the economic implications of the different strategies?

The authors found those factors affecting the choice of strategies were: farm household and head of household characteristics (e.g., age, gender, education, marital status, and farm household size); the presence of assets such as animals; the characteristics of the operating farm (e.g., soil fertility and erosion); past climatic factors (e.g., mean rainfall and temperature); the agro-ecological zone of the farm household; and the experience of previous extreme weather events, such as droughts, floods, and hailstorms. The authors also found that a combination of climate change adaptation strategies had a significantly greater positive effect on farm net revenues compared with those strategies adopted in isolation.

Rovin, K., Hardee, K., and Kidanu, A. 2013. "Linking Population, Fertility, and Family Planning with Adaptation to Climate Change: Perspectives from Ethiopia." *African Journal of Reproductive Health* 17(3): 15–29.

Global climate change disproportionately affects the world's most economically disadvantaged countries, with many of these countries also facing rapid population growth. However, the international research community has largely emphasized the role of population in regards to carbon emission reductions (i.e., mitigation strategies), rather than as a component of adaptation strategies. Furthermore, the role of women in adaptation strategies has also been underrepresented in existing literature, despite the evidence that women, especially socio-economically disadvantaged women, are disproportionately affected by climate change. This article thus raises the question: What do people who live in countries

that are facing both climatic changes and rapid population growth, as well as other demographic changes (e.g., rapid urbanization, migration, and aging), think?

This paper describes the perceptions of Ethiopians from two regions regarding: (a) understanding of and experience with climate changes; (b) factors contributing to their ability to adapt to future changes; and (c) the relationship between climate change, population, and fertility, and the potential role of family planning in building resilience. Fieldwork was carried out in the Oromia region and the Southern Nations, Nationalities and Peoples' Region (SNNPR) between December 2008 and May 2009.

The researchers used a case study approach with a qualitative cross-sectional design to capture the lived experiences of people currently experiencing the effects of climate change. Various data sources, including scientific literature, policy documents, and oral narratives, were used in order to represent more accurately the experiences of climate change in Ethiopia. The paper includes quantitative data on climate change in Ethiopia to the extent possible. Given the small size of the study areas, it was not possible to include data on climate and environmental changes at the local level.

The article shows that understanding local-level views on climate change and adaptations is essential for helping international policymakers and national leaders design new strategies to bolster resilience and ultimately prepare people and communities to adapt to more severe changes in climate.

Adhikari, U., Pouyan Nejadhashemi, A., and Woznicki, S.A. 2015. "Climate Change and Eastern Africa: A Review of Impact on Major Crops." ***Food and Energy Security*** **4(2): 110–132.**

Global warming has become one of the major challenges to maintaining global food security. This paper reviews the impacts of climate change on fourteen strategic crops for eight sub-Saharan African countries (Ethiopia, Kenya, Malawi, Mozambique, Rwanda, Tanzania, Uganda, and Zambia). By synthesizing more than 160 studies in a single review, this paper lays the foundation for planning adaptation measures in the region.

This study found that the impact of climate change on crop yields in the region is largely negative. As wheat has a lower optimum temperature for cultivation than rice, maize, millet, cassava, and sorghum, many simulation studies have projected a greater impact on wheat yield compared with other crops in East Africa. Wheat is reported as the most vulnerable and sensitive crop, for which up to 72% of the current yield is projected to decline. Without climate change adaptation, eastern Africa could lose about two-thirds of its wheat productivity by the end of the 21st century.

Furthermore, migration of the male population to urban areas in the region has increased the number of female-headed households, which lack financial resources and social support to adopt climate change adaptation measures. This male migration also disrupts the existing farming system and raises land ownership issues, thereby increasing the risk for women inherent in investing in irrigation infrastructure. As most of the cropped area is rain-fed, development of small-scale irrigation would be the most crucial step in ensuring future food security, but the affordability of irrigation for farmers remains a key problem. The development and dissemination of drought-tolerant crop cultivars could also help minimize the impact of climate change in drought-prone areas. The author's review of the literature revealed that most of the impact studies have focused on cereal crops, while a number of

non-cereal crops (e.g., banana, enset, sweet potato, cassava, potato), which serve as staple foods, are also important and should be considered in future research.

Oumer, A.M., and de Neergaard, A. 2011. "Understanding Livelihood-Poverty Links: Empirical Evidence from Central Highlands of Ethiopia." ***Environment, Development and Sustainability*** **13: 547–64.**

This article aims to provide empirical evidence on the links between livelihood strategies and poverty using a combination of typologies, identified from a range of income sources, assets, and agronomic strategies from an Ethiopian rural livelihood context.

The authors grouped households into different typologies based on qualitative and quantitative data, identifying six main agronomic strategies: (a) root crop/local livestock/eucalyptus, (b) cereal/local livestock, (c) legumes/vegetables, (d) eucalyptus/improved cattle, (e) vegetables/improved cattle/root crop, and (f) oil crops/grazing land. They also listed four dominant livelihood diversification strategies and income quartiles (proxies for poverty) using cluster and principal component factor analysis: (a) cereal-dominated livelihood; (b) casual off-farm; (c) integrated strategy, (i.e. regular off-farm-vegetables and livestock); and (d) specialized root crop activities. The study areas were located in the central Ethiopian Highlands. The central region of the highlands have the most diversity in terms of type of livelihoods of rural people in Ethiopia. A household survey was conducted on 179 farmers, drawn from a population of 1,780 farmers, between December and March 2008.

The article found households in the bottom income quartiles engaged in casual off-farm work and cereal-dominated livelihood strategies that tended to involve subsistence farming by growing cereals and oil crops. By contrast, farmers in the upper income quartiles adopted intensive agronomic strategies by integrating root crops, legumes, and vegetables with livestock. Qualitative interviews show that the "better off" farmers bought "better" food crops, such as teff, to meet their consumption, unlike the poor farmers who purchased the cheapest possible grain in the market. Women-headed households were positioned at the lowest income quartile in many cases.

The paper argues that diversifying livelihood activities tend to have positive outcomes in terms of household income and land resource management.

Camfield, L., and Roelen, K. 2012. ***Chronic Poverty in Rural Ethiopia through the Lens of Life Histories.*** **IDS Working Paper, 399, Institute of Development Studies, Brighton, UK, July 2012.**

Studying chronic poverty using retrospective qualitative data (life histories) in conjunction with longitudinal panel data is widely recognized as providing deeper and more reliable insights. Area-specific effects can be seen clearly in Ethiopia, which has a reputation as one of the poorest and most donor-dependent countries in Africa, with a history of centralized and authoritarian rule dating back to imperial times. This reputation can obscure the high level of differentiation between regions, communities, and households, and the speed of social change in some locations. The differentiation in experiences of poverty make life history methods a good choice because they can identify factors that drive or maintain households or individuals in poverty.

This paper uses three rounds of panel data and life histories collected by Young Lives, a longitudinal study of childhood poverty, to identify factors that contribute to households becoming or remaining poor in rural Ethiopia, with related effects on the children within those households. The life history data was obtained from 56 adults in 32 households across four sites (eight households per site). The sites were located in Amhara, Oromia, SNNPR, and Tigray regions. The study combined a case-centered and a variable-centered approach, analyzing and comparing the experiences of individual households on the basis of qualitative and quantitative techniques and interrogating these findings by looking at attributes of households (variables) across a larger sample. Data analysis followed a mixed methods design, characterized as "qual dominant" in that the authors began with a content analysis of the life histories to identify factors contributing to households becoming or remaining poor. These factors were then included in a Qualitative Comparative Analysis to confirm their validity and show how they combine to drive households into poverty or keep households in poverty. Finally, the authors returned to the quantitative data set to test the QCA results in the whole of the rural sample.

The substantive findings support those of previous studies: rainfall, illness, debt, and exclusion from the government's main form of social protection (Productive Safety Net Program) are "drivers and maintainers" of poverty. But by mixing different types of data and analysis, the paper is able to show that combinations of factors rather than single events drive households into poverty, and that household characteristics play an important part. This paper's primary contribution is methodological as it presents a novel method of using life histories to investigate chronic poverty in rural Ethiopia. The life histories provide not only a list of poverty drivers and maintainers for testing, but also a very real sense of how they combine in the lives and experiences of individual households.

Segers, K., Dessein, J., Hagberg, S., Develtere, P., Haile, M., and Deckers, J. 2009. "Be like Bees: The Politics of Mobilizing Farmers for Development in Tigray, Ethiopia." ***African Affairs*** **108(430): 91–109.**

This article analyzes the entanglement of local politics, local development brokerage, and farmers' participation in rural development. It is based on long-term ethnographic research (March 2005 to May 2007) in one locality in the Degua Temben district in central Tigray. The main body of data was collected through participant observation and interviews with farmers, farmer representatives, and local government officials. In addition, the authors studied development program documents such as strategic plans and extension manuals. On the analytical level, the authors took an actor-oriented approach and focused on local government officials and farmer representatives, who mediated between the government agencies that undertake rural development programs, and the farmers whom they addressed.

Tigray is the cradle of the Tigray People's Liberation Front (TPLF), the backbone of Ethiopia's current Ethiopian People's Revolutionary Democratic Front (EPRDF) government. The strong mutual support between Tigray's rural population and the TPLF during this revolution is legendary. To reach target numbers of program beneficiaries, these local development brokers "mobilized" farmers to participate by capitalizing upon the historical legitimacy of the 1975–91 revolution against the military Derg dictatorship. The brokers revitalized the farmers' collective memory of this alliance with the TPLF and reinvented the revolutionary grassroots institutions through which it was originally realized. The effects of this mobilization on participation in development were most evident among farmers who were members of the TPLF. A TPLF-development nexus arose, which structured local political career opportunities along the lines of development.

The results of the ethnographic research presented in this article justify doubts about the extent to which development in the region was supported by democratic decision-making. Local government officials and farmer representatives, mediating between farmers and the state, ensured the implementation of top-down development programs through their mobilization of farmers. Tigrayan farmers, the article argues, were so used to being summoned under the flag of participation to fulfil the aims of what they perceived to be the government's programs, that the prospect of really having a say seemed implausible to many of them.

Segers, K., Dessein, J., Develtere, P., Hagberg, S., Haylemariam, G., Haile, M., and Deckers, J. 2010. "The Role of Farmers and Informal Institutions in Microcredit Programs in Tigray, Northern Ethiopia." ***Perspectives on Global Development and Technology*** **9(3–4): 520–44.**

This paper investigates the outcomes, in terms of social and institutional change, of the introduction of microcredit in the Degua Temben district in Tigray. The investigation is based on ethnographic research conducted between March 2005 to May 2007 and takes an actor-oriented approach. The authors collected the main body of data through participant observation and interviews with farmers. Through successive interviews, and with the help of the participants' microcredit account books (when available), the authors recorded the credit histories of 25 households in detail. The authors also conducted interviews over the same study period with district and sub-district administrators and staff members and studied relevant microcredit program documents.

The article shows how farmers' appropriation of microcredit programs caused informal credit, land, and social security institutions to alter in significance, function, and meaning. Contrary to the aims of microcredit programs who wanted farmers to invest in small enterprises and productive assets, farmers used their loans to bridge seasonal food gaps and meet deficiencies in seeds. This depressed a number of long-standing informal institutions that regulated seasonal lending and land rental between households with differential access to resources.

This paper does not attempt to deny that microcredit in Ethiopia has increased rural incomes, improved food security, and empowered marginalized groups; rather, it shows that there is more to be said about the consequences of microcredit on society. In particular, the potential of microcredit to empower women has been much discussed. Microcredit is discussed as a means to empower women farmers *but* in 2010 there have been few ethnographic studies on the effects of microcredit on users. On a broader level, this paper analyzes how the global paradigm of microcredit to fight poverty comes up against local, historically grounded conceptions of debt, independence, and wealth in Tigray.

Woldegiorgis, B.D. 2014. "A Blueprint or a Mirage: An Anthropological Study of Agricultural and Institutional Practices, Engagements and Development Discourse in Ethiopia." Unpublished Master's thesis, Uppsala University, Sweden.

This research is based on fieldwork conducted from January to March 2012 in the Dewa Chefa district (eastern Ahmara region). The methodologies followed during fieldwork were participant observation, and one-to-one and group interviews. The focus of this thesis is on farmers' engagements and practices in agricultural activities that used small-scale modern

irrigation schemes administered by the District Rural and Agricultural Bureau. Issues raised and discussed by the informants were infrastructural and organizational problems, weak institutional capacity, political enforcement, land insecurity, agricultural production and market failures, and access to land for the younger population.

The main argument of this thesis shows how the government's development discourses have multiple purposes that are not only related to development practices and engagements, but also to the political realities and relations that exist between the government and rural agricultural people. The thesis explains how engagements, practices and discourses were strategized by the government and its institutions to assert power and to ensure farmers' compliance.

The author describes the relation between the farmers and the agricultural bureau as antagonistic. The farmers, in the eyes of the agricultural bureau officers, lacked work ethics or were lazy, did not like to work hard, were satisfied with limited production that enabled them to sustain their annual household food consumption, and resisted technologies and better farming systems implemented by the agricultural bureau. The thesis explains the relation between the farmers and the bureau staff as "the rich powerless and the poor powerful." For the farmers, the extension workers and irrigation officers were simply persons who came to their farmland wearing neat clothes and leather shoes and instructing what should and should not be done.

In conclusion, the author argues that power is arranged and organized in a top-down structure, and strategically operated through its bureaucratic institutions as a tool to enforce state power among local people.

Sisaye, S. 1978. "The Role of Social Sciences in Rural Development Planning: The Case of Ethiopia." ***African Studies Review*** **21(3): 75–85.**

Social scientists, with the exception of economists, have played a peripheral role in agricultural development planning. Program design and the implementation of development plans have been conducted mainly by technical scientists. In most cases, social scientists have been invited to justify the decisions of the technical scientists after the selection and the designing of the projects.

This paper points out some of the methodological, theoretical, linguistic, and other problems that social scientists face when they are involved in development planning by looking at some experiences in Ethiopia.

The author highlighted in particular how the lack of participation by small farmers, tenants, and landless laborers in the preparation and execution of local plans biased the focus of research towards wealthy farmers who lived in potentially rich agricultural areas. There was also a bias toward surveying areas that had been affected by the agricultural extension program due to the distribution of green revolution inputs. This research bias resulted in many areas where poor farmers lived being ignored. This affected development planning, with priority being given to the progressive farmers who lived in the rich agricultural areas. This problem was closely related to the social background of the researchers in Ethiopia. Most of the social science researchers come from urban areas and had middle-class origins, and often lacked a good understanding of the rural areas where the majority of the population lived.

This paper's evaluations specifically apply to the situation in Ethiopia prior to the 1974 revolution and are therefore limited with regard to understanding the country's present situation.

Pausewang, S. 1988. "Participation in Social Research in Rural Ethiopia." ***Journal of Modern African Studies*** **26(2): 253–76.**

In 1984/85, the Ministry of Agriculture carried out fieldwork in two districts in different ecological and cultural regions, financed by the Food and Agricultural Organization (FAO) through a grant from the Norwegian government. The author of this article was asked to serve as a consultant to the project and made four one-month visits to Ethiopia: during the planning phase, at the beginning and toward the end of fieldwork, and after the draft report was written and its summary and recommendations were discussed with peasants. This in-depth study aimed to analyze the work of peasant institutions in Ethiopia, including their cooperation with government departments and agencies, their relevance for the well-being and development of rural communities, and their capacity to facilitate peasant participation in local-level planning and self-administration.

The draft report recognized that, although the creation of so many peasant associations made it possible to communicate with peasants all over the country (with a few areas still not reached), there was overwhelming evidence that the organizational structure was almost solely used for communications from the top downward. The full democratic potential of the peasant associations had been poorly exploited, because their members were not participating as much as they could in planning and steering their own affairs, their views were not reaching the central political organs, and their collaborative efforts were stalling in the face of numerous obstacles. The article clearly indicates that the all-important interests of peasants were not represented as strongly as their proportion in the population would suggest; in other words, the views of the vast majority of the population did not have a voice in the national political bodies.

There appeared to be a huge communications gap, the author argued, between the central hierarchy and the rural population at large. Only if a rural research project is true to its commitment to participation will it help mediate between peasants and the authorities, instead of just collecting information for the latter.

Bevan, P., & Joireman, S.F. 1997. "The Perils of Measuring Poverty: Identifying the 'Poor' in Rural Ethiopia." ***Oxford Development Studies*** **25(3): 315–43.**

This article, which comes from a sociological tradition, focuses on the meaning and use of measures of poverty. The authors used data collected in rural Ethiopia from which they constructed four different measures of poverty: personal wealth ranking (PWR), community wealth ranking (CWR), household survey wealth, and consumption poverty. An economic survey of households was accompanied by qualitative research at community level using rapid assessment techniques and a "rapid" ethnographic approach. The article discusses three sites. Yetmen is in a grain surplus-producing area (Gojjam) and relatively wealthy. Shumsheha is in Wollo, prone to recurrent drought and dependent on food aid. Gara Godo, with a diversified rural livelihood system based on root crops (particularly enset), is in the densely-populated Wolayitta region, which has been regularly subject to "green famine" in recent years.

The article reveals how poverty in subsistence economies, which are dominated by seasonality and unstable weather conditions, and where market penetration is low, is a very complex phenomenon. The authors found that non-economic forms of capital were extremely important in determining life-chances in rural areas of Ethiopia. These included social, cultural, political, coercive, personal, and environmental capital.

"Entitlement norms," a form of cultural capital, were particularly important. These entitlements included rights of access to productive resources, including land, labor, livestock, capital, credit, and employment; political voice and political office; rights to leisure; inheritance rules; rules governing choice of marriage partner and divorce; norms relating to formal education; and access to community support. Many of these entitlements depended on ascribed status, especially according to gender, age, occupation, and ethnicity, while in some places other factors were important, for example, clan and/or lineage, and religion. People with minimal entitlements might be regarded as socially excluded. Those who were "entitled" by the norms of their local culture were more likely to have access to the other forms of capital.

Social capital was constituted through kin, neighborhood and friendship groups and networks, household organization, collective work groups, religious feasting groups, patron-client relations, rotating credit relations, and social insurance societies. For example, friends, relations, and neighbors often have quasi-rights to farm or domestic implements owned by individuals, and other scarce resources, such as cash and seed, may also be shared with them if they are in need.

Cultural assets included ritual and religious beliefs and roles, knowledge (including literacy), witchcraft, and local farming skill.

Political capital arose from elder status, clan or lineage rankings, Peasant Association office, the organization of opposition parties, and contacts with higher-level politicians and bureaucrats.

In conclusion, the empirical findings suggested that local conceptions of poverty were based more on capital held than short-term income/consumption. The paper's authors argue that contemporary poverty research should therefore bring the different forms of capital and well-being into the picture, and investigate the processes and institutions linking the different forms of deprivation and advantage.

Snyder, K.A., and Cullen, B. 2014. "Implications of Sustainable Agricultural Intensification for Family Farming in Africa: Anthropological Perspectives." ***Anthropological Notebooks*** **20(3): 9–29.**

This paper explores the contradictory and ambiguous ways in which "sustainable intensification" interventions often overlook fundamental social dynamics in rural landscapes. Examples from Ghana, Ethiopia, and Tanzania are used to illustrate these arguments. The author's observations are based on work conducted prior to 2014 as applied anthropologists with the CGIAR and as academic researchers working outside of the development system. Data are derived primarily from qualitative field research.

While there have been numerous initiatives to promote a Green Revolution for Africa, many tended to be dominated by technical fixes that failed to understand rural farmers' conditions or aspirations and focused narrowly on increasing productivity. Moreover, top-down technical approaches frequently found to fail to build on the local knowledge, innovative

capacity, and expertise of farmers and members of rural communities throughout Africa. There were numerous examples of indigenous intensification, but these were often overlooked and not well understood by technical experts.

This article demonstrates how a family farm is situated in wider social, cultural, political, and biophysical contexts, which together influence farmers' strategies and choices and affect their interests in and ability to increase production. In each of the sites described, a picture of a complex landscape mosaic emerged, in which farmers made strategic use of different resources and areas within their environment to pursue their livelihoods, experiment with new crops, engage in new markets, and search for new economic opportunities.

At the moment, in-depth anthropological analysis of African smallholder farming systems is largely missing from CGIAR research but, as this article argues, this kind of analysis should be playing a vital role in informing current attempts to promote sustainable intensification.

2.2. Farmers' knowledge, indigenous adaptations

Dea, D., and Scoones, I. 2003. "Networks of Knowledge: How Farmers and Scientists Understand Soils and Their Fertility. A Case Study from Ethiopia." ***Oxford Development Studies*** **31(4): 461–78.**

In Wolayta, southern Ethiopia, a number of research groups and development organizations at the time this data was collected and published (mid-1990s to early 2000s) were exploring how new networks between scientists, development practitioners, and farmers can be formed, developing methods to facilitate interaction and creating fora where dialogue and debate can take place. This article explores knowledge about soils and their fertility from the perspective of different players.

Drawing on a range of documentary material and detailed fieldwork carried out over a number of years, this article argues that, when looked at in terms of knowledge networks, scientific knowledge is little different from local knowledge, simply that the latter is associated with different networks of actors and with different relations of power.

The authors found that, just as with scientific knowledge, local knowledge of soil classification was specialized, limited to those who made use of it, shaped by histories of exposure and interaction, and conditioned by social relations such as gender. Most adult male farmers in Wolayta could name up to eight different soil types, depending on whether they resided in a highland, midland, or lowland area. But the terminologies were only well known to those actively engaged in tilling the land. Most women had little knowledge of local soil-naming systems, as their agricultural tasks were usually very limited. However, if a woman had been widowed or separated and ended up farming independently, she might soon acquire knowledge of soil types as a requirement of successful farming.

Furthermore, the local classification system was highly fine-tuned. Soils derived their names not only from their appearance and their properties for crop growth, but also from their landscape position. Central to the farming style in Wolayta was the transformation of soils through intensive gardening, involving the mounding of soil, rotation of crops, and manuring of the land. Local understandings of soils were dynamic and focused on the potential for transformation; soils change, and this change could be affected both by natural processes (e.g., erosion and leaching) and, more significantly, through human agency.

This dynamic view of soils influenced the way people viewed different types of inputs. Fertilizers were seen as alien, not part of nature. The term *talia* was used, which had a range of interpretations ranging from poison to medicine. Talia thus described how fertilizers could act as a cure to temporary ills—one farmer, for instance, likened fertilizer to an aspirin or painkiller—but the effect was quick and transient. By contrast, it was argued that manure, being derived from animals, could give life. The link between cattle, manure, and the soil is seen as more than a functional relationship. In Wolayta, cattle very often lived in the home; in a sense, they were a fundamental part of the family, with their own names and living space.

Ideas about soils, not surprisingly, were deeply embedded in the way farmers saw the world. Most people viewed soils as created by God, with soil fertility, and so agricultural productivity, the consequence of a successful interaction between spiritual governance and the hard work and investment of humans. Religious discourse, of whatever form, was found to have an important hold on people and helped frame knowledge about soils.

One common refrain heard again and again in rural Wolayta was that the younger men were no longer interested in agriculture. Older men argued that schooling and membership of new Protestant churches was distancing the younger men from agricultural activities; they were unable and unwilling to learn the nuances of local soil classification and the skills of soil transformation. The spaces where, in previous generations, men would exchange ideas about agriculture and soils were becoming fractured or were disappearing. Work parties, for instance, once central to the agricultural production system, were in decline, and a more individualized form of production was evident. Thus, the authors presented a situation where, it seemed, agricultural knowledge networks were becoming increasingly more disparate, fragmented, and transient, with the result that local knowledge was becoming more fluid, unstable, and contested.

> The soil on my land is very varied. Most of my land is red soil (*gorbua*), and this is where I grow most of my crops. However, there are also patches of black soil (*dubulia*) which are good for maize, enset and taro. In the lower-lying areas there is a sticky soil (*talla*), and a few areas of swamp-land (*charia*). Near the hill there are some rocky soils (*bokinta*), suitable for yam, sweet potato, cassava and peas, and further from my home the soil is sandy (*ache-bita*), giving lower yields. Some of the sloping area on my farm is very poor *bosolua* soil which is eroded and has little fertility. (Interview, Fachana Peasant Association, July 1995) (p.468)

> When I inherited this land, the soil fertility was poor (*lada*). The garden (*darkua*) area was very small. The soils in almost all the other plots were dying and very 'skinny' (*gilka*). Luckily, I started working on them before they died (*haiqoa*) and were completely ruined. Now I have expanded my garden (*darkua*) and also fattened (*ankara*) the soils in my land through my own efforts. Currently the soils in my land are more fertile than most of the farmers around here. This was made possible through continuous investment and work (*ossua*) and the effective keeping (*nagua*) of the land. Soils need continuous tending and care just like one does with children or cattle. (Interview, Lasho PA, August 1995) (p.469)

Reda, A.H. 2014. "Community-Based Adaptation to Climate Change: Interconnections between Environment, Livelihoods and Development in Abrha We Atsbha, Eastern Tigray, Ethiopia." In "Livelihood, Development and Local Knowledge on the Move." ***African Study Monographs*****, Supplement 48: 113–23.**

In Ethiopia, the long-term historical trend of recurrent droughts and food shortages are attributed to environmental degradation and declining rainfall. Past droughts have had a devastating impact, particularly in Tigray. The frustration of frequent crop failures and droughts led some men to migrate to neighboring areas in search of laboring work.

This study on the local knowledge and practices of the people of Abrha We Atsbha village in Tigray focuses on climate-resilient conservation practices and looks at the significance of these practices for sustainable agriculture and natural resource use. A household survey of 271 households was conducted between December 7, 2010 and January 1, 2011. Drawing on ethnographic interviews, focus groups, and participant observations, this study highlights some indigenous adaptation strategies (such as soil and water conservation, excluding communal lands from animal and human use, and the zero-grazing system) and the benefits of integrating them into formal climate change adaptation strategies.

Currently, there is growing consensus that conservation is best framed within the context of local knowledge, which in turn is regarded as an empowering exercise. By using their indigenous knowledge, the local community in Abrha We Atsbha have developed and implemented extensive adaptation strategies that have enabled them to reduce their vulnerability to climatic variability and climate change. Natural resource conservation schemes have increased the level of moisture in the soil and facilitated the replenishment of the underground water table.

The implication is that achievements that start out as a community initiative can later be adopted and incorporated into formal adaptation strategies by government and research institutions.

Derakhshani, N. 2015. "'God Has Locked the Sky': Exploring Traditional Farming Systems in Tigray, Ethiopia." Unpublished Master's thesis, Faculty of Economic and Management Sciences, Stellenbosch University, South Africa.

This study explores the environmental degradation of Tigray through both a literature review of its agricultural socio-political history and a lived experience in the village of Abraha We Atsebaha among farmers of the region. The study uses a variety of methodologies and methods, including a literature review, grounded theory, narrative inquiry, and ethnography, to expand on the factors that have contributed to the current degradation, the implications for traditional farming, and the potential for land regeneration.

The first part of the thesis seeks to explore how Ethiopians have shaped their natural environment. In particular, it focuses on deforestation, soil degradation, the role of changing governance and land-ownership patterns, and the effects of climate change. The author demonstrates that traditional farming systems do not operate in isolation from their socio-political and environmental context.

The second part provides an in-depth narrative inquiry conducted in Abraha We Atsebaha over a three-month period in 2014. This village is known for its indigenous farming knowledge, commitment to regeneration, and innovation in conservation practices. Interviews were conducted with selected farmers and local leaders and informal discussions were carried out with government extension representatives. It emerged during this process that underlying belief systems were exceptionally important in the context of traditional conservation.

This study provides learning points for improving development interventions in this region. It does not explicitly explore the role of religion in conservation or the potential long-term effects of current government policies and initiatives. However, it contributes to the small pool of literature on the region focused on traditional farming systems by providing a comprehensive overview of the drivers of degradation (historical and current); and it offers a unique, "soft" experiential narration of a village in northern Ethiopia that allows insight into farmer experiences, pressures and adaptation efforts.

Mequanent, G. 1998. "Community Development and the Role of Community Organizations: A Study in Northern Ethiopia." ***Canadian Journal of African Studies / Revue Canadienne des Études Africaines*** **32(3): 494–520.**

This article deals with the organizational aspect of using community-based organizations to support development initiatives. It analyzes the many constraints as well as opportunities that affect the structures and functions of community organizations. It perceptively argues that projects can mean different things to different people such that conflict and competition can surface in the social arena, and that there is no guarantee that every household will be a participant in the process. Dominant structures and interactions often create obstacles for certain groups to participate in the social arenas.

This article is based on a study of two types of community organizations, *mahabers* (religious associations) and *debaits* (agricultural work groups), in Gondar in northern Ethiopia. The purpose of the study was twofold. The first was an attempt to understand how community organizations actually work. The second was an assessment of the prospects for, and problems of, using mahabers and debaits to support rural development initiatives. The research was conducted from September 1996 to August 1997 in the Lay Armachiho district. Participatory observation and semi-structured interviews, including informal interactions, were used to document the processes of organizational formation, membership composition (age, gender, social status), membership criteria, decision-making structures, and leadership roles and responsibilities.

The main features of mahabers and debaits follow the conventional pattern of "community organizations"; therefore, one might argue they can represent ideal "development" organizations. However, this study found that members of mahabers and debaits were drawn from different communities and that, in many cases, strict criteria were used to decide who should and who should not be involved in the organizations. For example, debaits were a male domain, in part because tradition downplayed the role of women in agricultural production. Simply stated, the benefits of mahabers and debaits were exclusively reserved for members only, a limitation that conflicted with the objectives of promoting participatory and equitable development.

Moreover, since community organizations had limited material resource and organizational capacity to plan, organize, and sustain project activities, the author proposed that, for certain projects, organizations that operate on a scale larger than that of the community may be more effective. All of this means that what can and cannot be done at the community level should be assessed realistically and through in-depth examination of the roles that are played by community-level organizations.

Pankhurst, H. 1992. ***Gender, Development and Identity: An Ethiopian Study.*** **London, Zed Books.**

The social-anthropological fieldwork for this book was carried out during 1988/89 in a rural community within Menz (now part of Semien Shewa). The book discusses two sets of interactions: first, the relationship between the state and the peasantry, and, second, relations between men and women. The analysis focuses on understanding and explaining the position and the channels of action of the subordinate groups—the peasantry in one case, women in the other. The state's blindness to women contrasted with the emergence of women as significant actors in society, as contributors to household and community, in the realms of marital relations, in the individual life-cycle, and in religion.

In Menz some activities were more visible than others, both to the state and within society. Plowing is a male domain that could not exist without crop processing, which is a female domain. The state, nonetheless, remained focused on the men's principal work domain. This reduction of all agricultural production to crop cultivation reflected women's subordinate social status and failed to recognize their economic significance. Accordingly, when the role of livestock in the economy came to be examined, it was usually the largest, most visible, most expensive, male animal—the ox—that was highlighted. The ox was also the animal most closely associated with plowing, that is, the male task.

The visibility of cultivation contrasted with that of the more diverse set of tasks performed by women, which tended to be socially hidden. The author's core argument is that there is more to production than the crop cultivation that most observers focused on. Thus, there was a need to document, at length, the importance of livestock (mainly chickens and sheep), the associated fuel and wool economies, and the involvement of households in trade. The author shows that women's economic contributions could be found in numerous other spheres beyond the agricultural work symbolized simply by the plow and ox.

Women were not powerless, and this was particularly evident in the rights that many of them had in divorce. Women could act, being found to exit from marriages more frequently than men purposefully ejected them. The marital scene was therefore one of negotiation between men's greater and women's lesser powers of action. Neither state nor church had much success in regulating the forms of contract and number of marriages individuals entered into. However, the identity and valuation of women was established, at least in part, by reproduction, nurturing, and child-bearing. Life-giving events were firmly within the domain of women. Yet the burdens of biology and the social construction of womanhood did not appear to be considered by the government, whose interests and priorities were focused elsewhere.

In Menz, state ideology had little impact on rural beliefs and its legitimacy with the local population rested, in part, on a manipulation of Christianity. Religious beliefs remained fundamental to the population, both as explanations of natural and social phenomena and as an arena within which gender relations were negotiated. The dominant Orthodox Christian religion gave power to men rather than to women, yet it appeared to be more meaningful to women, who found support particularly in the Virgin Mary due to her association with childbirth. In addition, women prevailed in alternative, socially marginalized, and eclectic spirit beliefs. The spirit beliefs gave women a voice, and the space and time to clamor in a society that tended to demand their silence; these beliefs also provided a channel through which women could express dissatisfaction, seek attention, be made a fuss of, and receive material benefits and luxuries such as clothes, honey, and coffee.

This rich ethnographic exploration shows how women exist within an overall framework of male dominance and maintain a particularly tenuous and indirect relationship with the state.

Despite such obstacles, women found creative means of self-expression, rebellion, and control.

Cafer, A.M. 2011. "A Survey of Agricultural Productivity and Nutritional Status in Rural South Wollo, Ethiopia." Master's thesis, Department of Anthropology, University of Nebraska–Lincoln, April 2011. http://digitalcommons.unl.edu/anthrotheses/15/.

This project is unique in that it combines anthropometric measurements and a structured questionnaire to explore the link between agriculture, development, and nutrition. Data were collected during May, June, and July of 2010. The nutrition portion of the questionnaire targeted females because they were most likely to be aware of the various health conditions of the family. The questionnaire also incorporated information on food preparation and food storage as these are responsibilities that often fall upon the eldest female in the home. Both the economic and agricultural portions of the questionnaire were given to heads of household, male or female, or the oldest present male. Farmers' perceptions were used to gauge potential gaps between what farmers believed was healthy and what researchers suggested was important for maintaining a high health status. Additionally, the research design incorporated feedback from local development agents, faculty and staff at an Ethiopian university, and community leaders.

A survey of 120 households in seven villages within two districts of South Wollo revealed that a majority of households were suffering from severe malnutrition. Anthropometric measures showed wasting and stunting to be prevalent, particularly in children.

Sex and gender roles were important social factors that influenced many of the variables explored in this study. Sex of the head of household played a significant role in household vaccination status, duration of household food stocks, degree of crop loss due to drought, and the BMIs of individual household members. Food of all kinds in female-headed households, or at least households controlled by females, were used more successfully and efficiently for household purposes.

Of the 120 households interviewed during the study, almost 20% were headed by a woman. For female-headed households, the major significant differences between households within a village were in quantity of food stocks, land used for forest, land used for other purposes, percentage of land cultivated, and the number of oxen and mules or donkeys owned. Access to livestock was reduced for households headed by women. Households that were without oxen, female-headed households in particular, tended to be food insecure as a result of late planting or harvesting because they were forced to borrow animals from neighbors or kin.

This study supports many of the factors previous researchers have found to be moderately good predictors of household well-being. However, there are significant differences.

Livestock, a primary source of household wealth (particularly oxen), was not significant in predicting household well-being. The contribution of livestock in this context is more specifically that of draft animals rather than livestock raised as food . Other social factors, namely gender of the head of household and smaller types of livestock (e.g., sheep), were found to be better predictors of household well-being. This is important for policy makers, who may use previous studies to encourage livestock building to the exclusion of other forms development, such as micro-enterprises for women.

This study also found that female-headed households were positively associated with household well-being, despite being at a disadvantage in most measures of agricultural productivity.

Edwards, S., Gebre Egziabher, T.B., and Araya, H. 2010. *Successes and Challenges in Ecological Agriculture: Experiences from Tigray, Ethiopia*. Rome: Food and Agriculture Organization of the United Nations (FAO).

Conditions in the Tigray Region of Ethiopia pose difficult challenges to farmers. The region's degraded environment contributes to low agricultural production, in turn exacerbating rural poverty.

This report documents the results of the "Tigray Project," a broad-based open-ended experiment by farmers and local experts. The main aim of the project is to find out if a community-based ecological approach to rehabilitating the land and improving crop production through the application of ecological principles can both reverse land degradation and improve the livelihoods of poor smallholder farmers. The project motivates local communities to develop their own bylaws that apply ecological principles and protect their other interests to improve the lives of community members.

The report demonstrates that ecological agricultural practices, such as composting, water and soil harvesting, and crop diversification tailored to the diversity of soil conditions, can bring benefits to poor farmers, particularly women-headed families. Among the benefits demonstrated were increased yields and productivity of crops, an improved hydrological cycle with raised water tables and permanent springs, improved soil fertility, rehabilitated degraded lands, increased incomes, increased biodiversity, and increased mitigation and adaptation to climate change.

The successes of the project have led to its expansion to include many more communities in the Tigray Region and in the rest of the country.

Corbeels, M., Shiferaw, A., and Haile, M. 2000. "Farmers' Knowledge of Soil Fertility and Local Management Strategies in Tigray, Ethiopia." Managing Africa's Soils discussion paper series, no. 10, IIED-Drylands Programme, London, February 2000.

Declining soil fertility is a major constraint on crop production in the semi-arid highlands of Tigray, northern Ethiopia. This working paper presents the results of a participatory survey designed to characterize and analyze local knowledge about soil fertility and soil fertility management practices. The survey was carried out in two villages in Tigray. In each village, the research team selected a representative group of 25 farmers of both sexes and various ages and social classes.

It became clear from group discussions in both villages that farmers and scientists understood soil fertility in different ways. Scientists often only took account of the soil's nutrient status, without considering its physical properties. They defined fertile land as land capable of producing consistently high yields in a wide range of crops. Farmers' perceptions of soil fertility were not limited to the soil's nutrient status; they saw soil fertility as a multi-faceted concept that included factors such as the soil's capacity for sustainable productivity, its permeability, its water holding capacity, its drainage, tillage and manure requirements, and

how easy it is to work. Farmers also used another local system of classifying soil type according to yield, the topographic position of the field, the soil's depth, color and texture, the soil's capacity to hold water, and the presence of stones.

Socio-economic factors, such as a shortage of land and land fragmentation, had led to a decline in traditional soil fertility management practices. This will have substantial effects on soil fertility unless farmers take other measures to add nutrients to their soils. Farmers in the study area were aware of the problems caused by declining soil fertility.

The article argues that improving farmers' knowledge, as well as their capacity to observe and experiment, is an essential element in the development of integrated soil fertility management. It is also important to build on local systems of knowledge, as they relate to specific locations and are based on experience and understanding of local conditions of production. Such systems are a source of site-specific ecological information and provide the key to understanding peoples' socio-cultural conditions.

Kifleyesus, A. 2007. "Food Familiarity and Novelty in a Condition of Socio-Economic Transformation in North-Central Ethiopia." *Journal of Eastern African Studies* 1(3): 449–65.

This article is about ideas and practices concerning production, distribution, preparation, and consumption of food among the Muslim Argobba of Ethiopia. In 2006, fewer and fewer Argobba are producing the food items they consume, and many are drawn away from their rural homelands to become either merchants or wage laborers. The Argobba had shifted and drifted to a diet of several imported food products based on staple commodities, such as wheat flour, bakery bread, pasta, and products with a high value-added content through processing and packing.

The author thus examined how Argobba consumers had become accustomed to foreign foods and new modes of preparation and distribution of foods, and how such changes had altered the ways in which food expressed social relations in terms of class, ethnic, and gender identity. The author also looked at food politics and aesthetics and the gendered meanings behind the organization of Argobba menus and meals in changing environmental and socio-economic conditions.

This article explores the nature of meals, not only how they emphasize and formalize gender difference and how children are socialized within gendered relations embedded in foodways, but also how the organization of the dinner tables, or plate, reflects social differentiation that is loaded with gender meanings. This article also analyzes the extent to which meals construct social boundaries by focusing on the nature of ritual meals in Argobba households and by discussing the ways in which cooking, and cuisine reflect local, regional, and national socio-economic changes resulting from environmental disturbances, reorientation of regional trade routes, and internal and external market exchanges.

Persoon, J.G. 2016. "Indigenous Cosmological Paradigms for Popularizing Ecological Ethics in the Ethiopian Context." In *Climatic and Environmental Challenges: Learning from the Horn of Africa*, edited by D. Ambrosetti, J-R. Boisserie, D. Ayenachew, and T. Guindeuil, 134–44. Addis Ababa: Centre français des études éthiopiennes [online]. http://books.openedition.org/cfee/101.

This article analyzes how the ecological discourse in Ethiopia has become part of the robustly positive "Ethiopia Rising" narrative, which dominates domestic media networks in Ethiopia with announcements on rural electrification, the green economy, and green development. The author argues that in developing countries, where technological development is just beginning to have an impact on the mass of the population, rapid economic development tends to be prioritized. The perceptions and attitudes of people toward the environment have gradually changed; economic advantages have become more important than environmental considerations. Meanwhile, ecological awareness requires a long-term view, involving investment in the future.

This article aims to unravel aspects of beliefs, values, and attitudes that are often ignored in the mainstream ecological/climate change discourse. In fact, Ethiopia remains dominated by deeply religious and traditional sentiments, even among its youth. Thus, cosmological ideas and indigenous philosophies could constitute the most natural way of involving local communities in the ecological/climate change discourse.

Traditional religious texts and cultural practices constitute an untapped and disregarded resource for ecological thinking. Despite efforts to involve religious authorities in reforestation campaigns, no attempt has been made to systematically and holistically use indigenous thought to promote indigenous ecological ethics systems.

The author suggests that mobilizing indigenous ideologies and ways of thinking—and in this respect cosmologies, theologies, and, above all, spirituality—may well contribute to the success of environmental programs, as well as help local communities build capacity to adapt to climate change and meet their food security needs.

Freeman, D. 2015. "Techniques of Happiness. Moving toward and away from the Good Life in a Rural Ethiopian Community." *HAU: Journal of Ethnographic Theory* 5(3): 157–76.

This article is based on 21 months of field research in the Gamo Highlands of Ethiopia between 1995 and 1997, plus subsequent visits in 2005, 2006, 2007, 2009, and 2011. It looks at specific social and cultural practices that appear to enhance happiness—what the author calls "cultural techniques of happiness"—and analyzes how they function and how they are intertwined with certain forms of social organization and cultural ideation. The nature of happiness, as both concept and lived experience, can change over time.

The article considers happiness as experienced in the community of Masho at two different points in time. It starts by exploring the traditional Gamo concept of happiness. In the mid-1990s, this concept of happiness was experienced mainly as peaceful sociality (encompassing the values of togetherness, mutuality, and smooth social relations) and as fertility (including crops that grow well, women that give birth, and children and animals that grow strong and healthy). Gamo sociality was intensified by two cultural techniques of happiness: the act of "playing," which refers to the joking, teasing, and banter that characterize much of Gamo social interaction; and the drinking of coffee.

The article then charts the move toward a more market-based socio-economic reality that has taken place over the last twenty years and shows how the concomitant decrease in peaceful sociality and connection, and increase in inequality and internal competition, has led to a decrease in happiness of most people. In the 1990s, most people in Masho were engaged in subsistence agriculture, growing barley, wheat, potatoes, beans, and enset. However, in

1998, an NGO started a development project in the area and selected Masho as one of its target villages. One of the main aspects of this project was to get people to grow apples, and to become more involved in the national market economy.

Alongside the change in production and market activity, there has also been a major religious, during which time by far the majority of people in Masho had converted to Pentecostal Christianity. In contrast to traditional rituals that focus on the social order, Pentecostal ritual focuses almost exclusively on the inner emotional world of the participant. The author argues that Pentecostal church services in Masho, particularly its rituals, act as new cultural techniques of happiness. They provide believers with a new sense of self that is loved and empowered, a new set of values, new forms of community and togetherness, and a new emotional landscape.

In charting the way that happiness shifts from being imbued in the social fabric to being more about deep interior spaces, this article argues that happiness is configured differently in different social and cultural contexts and that different experiences of happiness are fundamentally linked to different experiences of the self. As exchange has become increasingly commoditized, so happiness appears to have become increasingly privatized.

2.3. Gender bias, gender blindness

Buchy, M., and Basaznew, F. 2005. "Gender-Blind Organizations Deliver Gender-Biased Services: The Case of Awasa Bureau of Agriculture in Southern Ethiopia." ***Gender, Technology and Development*** **9(2): 235–51.**

The data for this article was gathered in July and August of 2003 from several sources: annual reports and policy documents; a series of open-ended questionnaires answered by 31 district-level technical staff members; individual life stories of four staff members from the Awasa Bureau of Agriculture (ABA) in the Sidama zone of southern Ethiopia; and some observations from the second author who is also a member of the ABA. The authors recognize that, to be very conclusive, their results should rely on more in-depth interviews and on a wider sample.

The article shows how ABA projects and programs were typically designed without considering women or the poor and were evaluated from the perspectives of men farmers only. Moreover, there was no gender policy and no gender awareness, with limited transparency and participation within the organizational structure. The authors argue that the ABA, being a gender-blind organization itself, was ill-equipped to motivate its staff to make specific efforts to reach out to women farmers, and thus failed to involve women farmers in its extension activities.

While farmers in general received very limited attention, women (who form the majority of farmers in the Sidama zone) received even less. The authors show very clearly that extension packages were gender-biased. They contend that the gender bias of individuals within the organization as well as the gender bias of the organization itself not only prevented the development of a gender equitable workplace but ultimately resulted in gender discriminatory outreach. To be participatory in the field, development organizations need to institutionalize participation within themselves: change has to occur "within," so that staff can change their interaction with the "outside" world.

Alesina, A., Giuliano, P., and Nunn, N. 2013. "On the Origins of Gender Roles: Women and the Plough." ***Quarterly Journal of Economics*** **128(2): 469–530.**

This study examines the historical origins of existing cross-cultural differences in beliefs and values regarding the appropriate role of women in society. Specifically, the authors sought to test the hypothesis, put forth by Ester Boserup (1970) that differences in gender roles have their origins in the form of agriculture traditionally practiced in the pre-industrial period. Boserup's hypothesis identifies important differences between shifting cultivation and plow cultivation. Societies characterized by plow agriculture, and the resulting gender-based division of labor, developed the belief that the natural place for women is within the home. These cultural beliefs tend to persist even if the economy moves out of agriculture, affecting the participation of women in activities performed outside the home, such as market employment, entrepreneurship, or participation in politics.

To test Boserup's hypothesis, the authors combined pre-industrial ethnographic data, reporting whether societies traditionally practiced plow agriculture, with contemporary measures of individuals' views about gender roles, as well as measures of female participation in activities outside the home. Their analysis examined variation across countries, ethnic groups, and individuals. Consistent with Boserup's hypothesis, they find a strong and robust positive relationship between historical plow use and unequal gender roles in the present. Communities historically based on plowing technologies also show less participation of women in modern-day agriculture.
The authors also empirically examined the hypothesis that an important determinant of whether the plow was adopted was the characteristics of crops that could be grown in a particular location. According to Frederic Pryor (1985), the plow is more beneficial for crops that require large tracts of land to be prepared in a short period of time and can only be grown in soils that are not shallow, sloped, or rocky. These crops, referred to as "plow-positive," include teff, wheat, barley, rye, and wet rice. These can be contrasted to "plow-negative" crops, such as maize, sorghum, millet, and various types of root and tree crops, which require less land to be prepared over a longer period of time, and/or can be cultivated on thin, sloped, or rocky soils, where using the plow is difficult.

Gella, A.A., and Tadele, G. 2014. "Gender and Farming in Ethiopia: An Exploration of Discourses and Implications for Policy and Research." FAC Working Paper 84, Future Agricultures Consortium, Brighton, UK, January 2014.

The positioning of men and women in relation to farming, the spaces they are and are not allowed to occupy, the embodied nature of agricultural activities, and their implications to the future of African agriculture and rural youth have attracted little attention in studies of Ethiopian/African agriculture thus far. In this working paper the authors explore the utility of these issues in understanding gender relations within the context of small-scale family farming in Ethiopia.

Based on two qualitative studies of rural youth in three rural farming villages (in the Amhara Region and the Southern Nations Nationalities and Peoples Region), this paper explores the cultural and highly symbolic construction of "the farmer" as an essentially masculine subject in Ethiopia. A combination of various qualitative methods comprising in-depth and key informant interviews and focus group discussions were used in both sets of studies. A total of 167 people were interviewed.

Participants were asked to describe the farmer in their own words. These descriptions, irrespective of who was speaking, were invariably about the farmer in the masculine. Often, the reference to the farmer as male was very explicit: *he* is this or *he* is not that, *he* can do this or *he* can't do that, and so on. Even when there were no explicit masculine markers, references to the farmer as a male were visible in more subtle ways. This lack of recognition is not limited to men and agricultural extension workers.

Given the hegemonic nature of gender structures, women themselves were found to undervalue their involvement in and contributions to farming. Yet many labor-intensive agricultural activities, such as land preparation, weeding, harvesting, and transporting harvests, require the active involvement of women alongside men. Women are also primarily, and most often exclusively, responsible for tending to backyard gardens, cleaning animal barns, milking, milk processing, and looking after poultry.

The question then becomes, why has the farmer come to be a masculine construct? The authors argue that, due to its likely origin and long use in the region, the plow (*maresha*) occupies a pivotal and privileged place in the history of farming in Ethiopia. Its practical and symbolic importance and its placement in the exclusive domain of men have resulted in the construction of a particularly male-centric notion of what it means to be a farmer and who can be considered one. Women are placed in the position of helpers and caretakers to the men, who do the "real farming," due to the symbolic and physical association of the plow (and to a lesser extent, the ox) with the male farmer as well as the ways in which the bodies of men and women are socially constructed. Nowhere in the literature or in the authors' own observations were married women found to plow alongside their husbands.

Although it has been argued that men have certain physical advantages that explain this male-centric dominance, the authors suggest that notions of social embodiment (and social construction of the masculine and feminine bodies) have better explanatory power. There appear to be important differences in the way men's and women's bodies are perceived in relation to farming implements and activities, on the basis of which narratives of what they can and cannot do are constructed.

> There is this tradition that has been brought on from the past. For example, you will never see a man baking *injera* or cooking or a woman ploughing land or sowing seeds in the farm. It is just tradition, but it still keeps men and women doing different things. (Female high school student, Chertekel) (p.9)

> Even if a woman had her own land but had no husband, she can't farm it herself. Maybe she can rent it out to a man who can, but she can't go out with a plough and a pair of oxen to actually farm it herself. (Female high school student, Chertekel) (p.9)

Ogato, G.S., Boon, E.K., and Subramani, J. 2009. "Improving Access to Productive Resources and Agricultural Services through Gender Empowerment: A Case Study of Three Rural Communities in Ambo District, Ethiopia." *Journal of Human Ecology* 27(2): 85–100.

This article is based on research conducted in the Ambo district between July and September 2007. The district is located in the West Shewa zone of Oromia, Ethiopia. Primary data were collected through questionnaires, interviews, observations, focus group discussions, participatory rural appraisal, gender analysis, and case studies (life history approach). The statistical package for social science (SPSS) was used to analyze data from the field.

Employing the concept of gender empowerment, the article identifies and analyzes factors that constrained the productivity of female farmers in the district. The results of the study indicate that gender-neutral crop production and management interventions did not have the same impact on rural male and female farmers. The latter had limited access to key productive resources such as land, irrigation water, extension services, credit, and rural institutions. Compared to male farmers, female farmers in the three communities were not benefiting much from the current agricultural extension package because of its gender-neutrality and the top-down nature of the program.

The results of the research revealed that women's access to resources was constrained by historical and cultural factors, women's lower visibility in the cash economy, and women's limited participation in decision-making. The dominant approach to research and extension still followed the pattern of "transfer-of-technology," an approach that assumes knowledge is created by scientists to be packaged and spread by extension agents for adoption by farmers. This approach was reported to deny and often suppress local initiatives.

Debsu, D.N. 2009. "Gender and Culture in Southern Ethiopia: An Ethnographic Analysis of Guji-Oromo Women's Customary Rights." ***African Study Monographs*** **30(1): 15–36.**

This article is based on fieldwork research conducted from July 2005 to June 2006 using participant observation, structured and unstructured interviews, oral history, and case history methods. Thirty key informants for unstructured and semi-structured interviews and 60 households for the household survey were selected from two research sites. Overall, ten female-headed households for the household survey, and ten female informants for interviews were included in the article's analysis to represent women's views.

To understand the position of Guji-Oromo women in their society, this article analyzes and discusses myths and stories about men and women, gender-based division of labor, and general discourses about gender. The analysis demonstrated that Guji-Oromo women had more cultural and economic rights than was immediately apparent, albeit these rights were exercised subtly. Women actively participated in the ritual aspect of the *gada* generation grade system, but they were marginally involved in political activities. While customary laws provided women with strong protection from mistreatment by husbands and their clan members, several myths and legends portrayed them as ineffective for war, politics, and administration. Contrary to those myths and legends, women continued to provide an important service to their society as links between communities and peace negotiators during and after conflicts. They also enjoyed claims to family property in several indirect ways.

A change from pastoralism to agro-pastoralism, however, caused women to lose some of these economic and customary legal rights. The author discusses the gender division of labor, arguing that men's labor had a seasonal nature; the men were busy during the plowing and sowing seasons and then relaxed during the dry season. Unlike the men, the women remained busy throughout the year with routine domestic chores and agriculture-related activities, although they had little control over agricultural products. Women were suffering from loss of animals, labor, and land, and cereals were mostly controlled by men. Therefore, the expansion of agriculture had increased women's work burden and reduced their control over resources.

Hebo, M. 2014. "Evolving Markets, Rural Livelihoods, and Gender Relations: The View from a Milk-Selling Cooperative in the Kofale District of West Arsii, Ethiopia." In "Livelihood, Development and Local Knowledge on the Move." ***African Study Monographs*****, Supplement 48: 5–29.**

This research article is largely qualitative and exploratory. Based on in-depth interviews conducted in 2012, and a number of case studies, including one of a market-oriented milk cooperative, this article explores how evolving markets are affecting the Arsii Oromo's traditional relationship with milk, rural livelihoods, and gender relations in the Kofale District.

The people living in this area depended on their own agricultural products for their livelihoods. This self-reliance was supplemented through some exposure to local food markets. More recently, however, the people's market interactions had become more intense as a consequence of market-oriented government development strategies and infrastructure improvements that resulted in easier access to markets. Local people found themselves being integrated into a broader economy, and consequently caught between the competing objectives of meeting household consumption needs and the commercialization of their produce. These external influences led to a change in the types of items made available for sale. Milk, which had been used by the Arsii Oromo primarily for home consumption, was subsequently being commercialized in the Kofale District.

Milk has always constituted a major component of the Arsii Oromo's diet and food culture, and it is one of their most ritually and nutritionally important food items. Responsibility for milk was traditionally fell in the women's domain, and women largely controlled decisions over its distribution for consumption, transfer as gifts, and accumulation for making butter. This article show that these patterns of behavior have now apparently changed as a result of commercialization. One informant's assessment of the issue presents a powerful story in this regard: "We [women] ply the milk; they [men] gather the money." The article perceptively shows how the genuine participation of women in decision-making is still a difficult exercise.

Tebekaw, Y. 2011. "Women's Decision-Making Autonomy and Their Nutritional Status in Ethiopia: Socio-Cultural Linking of Two MDGs." In ***The Demographic Transition and Development in Africa: The Unique Case of Ethiopia*****., edited by C. Teller and A. Hailemariam, 105–24. Dordrecht: Springer.**

The main objective of this research article is to explore the relationship between women's empowerment and their nutritional status in Ethiopia. The study used nationally representative data from the 2005 Ethiopia Demographic and Health Survey and employed a logistic regression model for the multivariate analyses part. The dependent variable in this study was women's nutritional status, which was measured in terms of body mass index (BMI). The principal independent variables of interest were those reflecting women's involvement (final says) in decisions regarding four domains of household life: making large household purchases, making day-to-day household purchases, deciding on respondent's own health care, and visits to family/relatives. An index was developed on women's decision-making autonomy. In doing so, women who had full/independent autonomy in at least two of the above four specified decision-making areas were assumed to have "high" decision-making power; women who had full autonomy in having their final say in only one of the four or those who made joint decisions in all of the four decision-making areas were assumed to have "medium" decision-making power; and the remaining were assumed to have "low" decision-making power.

The findings indicate that 28% (rural = 32.1%) of Ethiopian women were undernourished. Women with low decision-making power were more likely to be undernourished than those with high decision-making power. Women's educational attainment, employment status, and household property possession were identified as the major pathways through which the decision-making power of women affects their nutritional status.

It was found that women had more autonomy with regard to purchases for daily household needs than for their health care, large household purchases, or visits to family/relatives. This is an indication that women's lack of autonomy in important decisions is linked to their poor nutritional status. These findings illustrate the importance of examining the different dimensions of women's autonomy separately in order to understand which factors most affect the nutritional status of women.

Aregu L., Puskur, R., and Bishop-Sambrook, C. 2011. "The Role of Gender in Crop Value Chains in Ethiopia." Paper presented at the Gender and Market Oriented Agriculture (AgriGender 2011) Workshop, Addis Ababa, Ethiopia, January 31–February 2, 2011. Nairobi, Kenya: International Livestock Research Institute (ILRI).

This paper discusses gender issues in the context of the Improving Productivity and Market Success of Ethiopian farmers project (IPMS) being implemented by the International Livestock Research Institute and the Ministry of Agriculture and Rural Development. The project conducts action research through 10 pilot learning *woredas* (PLWs) located in four regions of the country (Tigray, Amhara, Oromia, and Southern Nations, Nationalities and People's Region). The fieldwork was conducted between 2005 and 2007 with groups of women and men farmers in four communities in each PLW. Groups typically comprised 10 to 26 people, of whom one-third to a half were women. Information was gathered using a range of participatory methods, including wealth ranking and a gender analysis of access and control of resources and benefits; decision-making; division of labor in production and marketing; social capital and technology pathways.

The authors found that, in addition to working in the home and on the farm, rural women engaged in a diverse range of off-farm livelihood activities. Women from rich and middle wealth households often traded in agricultural products, whereas poorer women worked as casual laborers on farms and in the homes of richer households. Poor women also harvested natural resources for resale (fuel wood, sorghum stalks, and grass) or engaged in low input activities, such as cotton spinning or making *injera* for sale. Generally, the gender division of labor was less marked in poorer households and income tended to be shared more equitably.

In most households, men were the key players in crop production, and were also the principal beneficiaries in terms of control over income generated from the sale of produce. Men were typically responsible for the heavier manual tasks, such as land preparation and tillage with oxen and for threshing and winnowing cereal crops. Men also played the dominant role in seed selection, reflecting their better access to information; they also perform the skilled jobs of broadcasting seed and fertilizer. However, once a household adopted row planting, any family member could plant.

Women from all households were generally involved with activities that require dexterity and attention to detail, such as raising seedlings in nurseries, transplanting, and weeding. They were also involved with activities closely associated with their household responsibilities, such as storage, processing, and turning grain/produce into saleable goods and goods

suitable for home consumption (e.g., baking bread, making yoghurt). They generally had little control over the income benefits of production. As a result of the dominance of men in marketing, women sometimes resorted to selling small quantities of the produce in secret, which can result in market inefficiencies.

Women's preferences for crop varieties differed from that of men. Women opted to produce types/varieties of crops that were mainly used for domestic consumption, whereas men preferred crop varieties that had high market demand and fetched high prices. Poorer households tended to generally prefer less risky, disease-resistant, and locally available crop varieties.

Although both women and men benefited from improved technology availability and adoption, men tended to benefit more. Men depended mainly on formal information sources while women mostly exploited informal ones. Women farmers rarely got extension support that would have enabled them to enhance their knowledge and skills and thereby improve the performance of their agricultural activities. The focus on men assumed that they would pass the knowledge acquired to their wives and other family members. But this did not happen in reality.

Decisions about enterprise mix and technology adoption, including seed selection, were mainly taken by men and, in some cases, were negotiated between husbands and wives. The general trend appeared to be one of male-dominated decisions in rich and middle households, and joint decisions in poor households. Only in female-headed households did women control the decisions, yet this still tended to be in consultation with their male relatives. The authors noted that, even though men appeared to be in control of decision-making, they usually consulted their wives and women had a strong influence on the outcome.

This article demonstrates that any initiatives aimed at improving or adapting field activities need to conduct site- and commodity-specific studies to know who the principal audience is, who will bear the additional burden of work, who will be principal beneficiaries, and how will marginalized groups benefit.

Kodama, Y. 2012. "Young Women's Economic Daily Lives in Rural Ethiopia." IDE-JETRO discussion paper no. 344, Institute of Developing Economies, Japan External Trade Organization, Chiba, Japan, March 2012.

The aim of this paper is to elucidate how on-going rural transformations (such as de-agrarianizing due to acute land shortage, increasing out-migration, and educational expansion) have affected young women's lives in terms of education, marriage, economic activities, and intra-household power relationships, especially with their parents.

The research was conducted at a market place surrounded by agricultural villages in the South Gondar zone, Amhara Region. The survey participants were 52 randomly selected young women, aged 15 to 29. The author purposefully selected 26 women out of the 52 for in-depth interviews. The interviews were critical—the closed questions of a survey cannot clearly explain cause and effect or the delicate changes in social relationships. The interviews were based on the women's experiences at crucial points in their lives.

The limitations of this research are that it was conducted solely with young women and no other household members. However, considering the absence of any analyses of rural

transformation affecting young women, this article contributes to filling the gap in discussions about livelihood diversification and young people in rural societies. Rural studies related to young women in rural Ethiopia have, in fact, not focused on their economic activities, but instead focused on the custom of early female marriage from sociological, educational, and medical points of view.

The principal result of this research shows a complex interaction between the livelihood diversification of households and rapid educational expansion. There are possibilities for young women to financially support parents, unlike in the past when young women were married off to the other households. This implies a change in the power relationships between young women and their parents, who expect financial support from daughters as well as sons. For example, interviews with single women living with parents revealed that their role in decision-making about their own marriages has been changing toward greater autonomy for themselves.

This article shows that educational expansion has affected the course of women's lives. Firstly, it has increased employment opportunities for young women. Secondly, considering the long tradition of early marriage among the Amhara people, a longer education has physically delayed their entry into the marriage market. Previously in South Gondar, sons had inherited land from their parents and supported them by living next to their houses, while daughters were sent off to different villages due to the conventional custom of patrilocal marriage. The changes in young women's economic roles in their natal households reported in this paper seem to be a new phenomenon in rural Ethiopia.

Aguilar, A., Carranza, E., Goldstein, M., Kilic, T., and Oseni, G. 2014. "Decomposition of Gender Differentials in Agricultural Productivity in Ethiopia." Policy Research Working Paper, WPS 6764, World Bank Group, Washington, D.C., USA, January 2014.

Following the classical approach of the gender wage differences literature, this paper employs decomposition methods to determine to what extent the differences in productivity are explained by: (a) gender disparity in the levels of determinants of production (e.g., differential access to productive inputs, technology, and training, or the individual characteristics of land managers); and/or (b) gender inequality in the returns of those determinants.

The data set used in this paper corresponds to the first wave of the Ethiopia Rural Socioeconomic Survey (ERSS) conducted in 2011/12. This survey is representative at the national level and for the four largest regions (Amhara, Oromiya, SNNPR, and Tigray). The survey includes data from the post-planting and post-harvest periods of the main agricultural season. Data are available at the field level. For each field, the survey asked the household to identify the person within the household in charge of the management and decision-making of every piece of agricultural land. Of the total sample, 1,518 managers are considered for this analysis, of which 1,277 are male (84.1%) and 241 are female (15.9%).

An overall gender difference in productivity of 23.4% favoring men was found, of which 10.1 percentage points (43%) correspond to the endowment effect. On average, female managers managed smaller plots, used less non-labor inputs (e.g., livestock and tools), regularly spent less time in agricultural-related activities, were less likely to use rented fields to produce, and inhabited smaller households with lower average income.

Herman, M. 2016. "Women and Climatic Changes in Ethiopia: A Gendered Assessment." In *Climatic and Environmental Challenges: Learning from the Horn of Africa*, edited by D. Ambrosetti, J-R. Boisserie, D. Ayenachew, and T. Guindeuil, 123–33. Addis Ababa: Centre français des études éthiopiennes [online]. https://books.openedition.org/cfee/101.

This article aims to understand how women have been recognized as effective and independent actors in answering some of the challenges posed by climate change. At the same time, the article questions the relevance and reliability of a gendered approach in overcoming the problems generated by climate change in the African context in general, and the Ethiopian case in particular, when many finance programs and strategies continue to overlook typical women's activities that could count as adaptation and mitigation (e.g., tree planting). Finally, it explores how the theme "gender and climate" in Ethiopia can propose new paradigms for reflection.

The article retraces the critical intersection of climate change and gender mainstreaming. In all developing countries it has now been demonstrated that women are more vulnerable to climate change effects because two-thirds of women are poorer, receive less education, and are typically not involved in political and household decision-making processes that affect their lives. However, paradoxically, it has at the same time been noticed that women can help to bring about a more effective and sustainable response to climate change due to their unique skills relating to their environment, and their knowledge of natural resources and environment (e.g., potable water sources, soils, seeds, and animal reproduction).

The author provides examples of what has been achieved in bringing together the two agendas of climate change and gender mainstreaming and highlights the benefits of actions taken based on local peoples' experiences, knowledge, and way of living.

Mersha, A.A., and Van Laerhoven, F. 2016. "A Gender Approach to Understanding the Differentiated Impact of Barriers to Adaptation: Responses to Climate Change in Rural Ethiopia." *Regional Environmental Change* 16: 1701–13.

While adaptation strategies have received a fair amount of attention in climate change discourse, barriers to adaptation are the focus of a more specific, recent discussion. The range of barriers to adaptation includes education, age, wealth of the household head, access to extension and credit, and gender. Such barriers are generally treated as having a uniform, negative impact on all actors. This article argues that the precise nature and impact of such barriers on different actors has so far been largely overlooked.

The authors take a gender perspective when looking at the adaptation measures of male- and female-headed households, respectively, in drought-prone rural areas of Ethiopia. The study aims to answer two research questions. First, how do male- and female-headed households adapt to climate change, in particular to drought? Second, how do various types of (interconnected) barriers to adaptation influence their respective adaptation choices?

To this purpose, the authors built a conceptual framework based on the Sustainable Livelihood Approach (SLA). The study was conducted in two selected districts in the northeastern highlands of Ethiopia (Raya Azebo in Tigray and Kobo in Amhara). The fieldwork was conducted in March and May of 2014 using semi-structured interviews and focus group discussions with male and female household heads. In addition, informal

discussions with villagers, non-structured interviews with local extension workers and elderly villagers, and observations complemented the data collection.

Overall, the results from both study sites indicate gender-based differences in choices of adaptation measures at the household level. A practical implication of these findings is that (planned) interventions to overcome barriers to adaptation—by governments, international donors, and NGOs—should be inclusive of all actors. Failure to acknowledge the interconnectedness among barriers to adaptation may lead to discriminatory outcomes, where often-disadvantaged groups, such as female-headed households, will have their adaptation options further limited, rendering them even more vulnerable to climate change.

Henry, C.J., Elabor Idemudia, P., Tsegaye, G., and Regassa, N. 2016. "A Gender Framework for Ensuring Sensitivity to Women's Role in Pulse Production in Southern Ethiopia." ***Journal of Agricultural Science*** **(Toronto) 8(1): 80–91.**

Female-headed households and female farmers in male-headed households represent a large production resource in the agricultural sector in Ethiopia, particularly in pulse cropping. Yet many studies in the agriculture and agronomy field indicate that men are the key players in crop and livestock production and are also the principal beneficiaries in terms of control over the income generated from the sale of produce. Empowerment of rural women is crucial, in part because of the link of pulses with improved household nutrition, but also because women are more likely than men to invest in children's health and nutrition.

The main objective of this paper is to develop a gender framework to guide a Canadian International Food Security Research Fund (CIFSRF) project. The project sought to reduce protein-calorie malnutrition in Ethiopia by promoting the adoption of pulse technologies and nutrition interventions at household level, especially for young children and women. The gender framework was developed based on baseline data collected from 665 households randomly drawn from three districts of SNNPR (namely Hallaba Woreda, Hawassa Zuria, and Damot Gale) and one district of Oromia (Jido Combolcha).

The authors highlight components of the gender framework. Their descriptive analysis shows that female-headed households owned significantly less land, livestock, and other important strategic resources compared to male-headed households. Moreover, the role of women was found to be less valued in pulse production, with local cultural practices limiting women from benefiting economically from the sale of pulses.

The gender framework developed in this paper indicates five key gendered pillars for improving pulse productivity/management and nutrition: knowledge, skills and training acquisition; participation in production and decision-making; access to resources; control over resources; and policy development. The authors argue that the framework can be expanded to other contexts and regions relatively easily.

Cohen, M.J., and Lemma, M. 2010. "Making Rural Services Work for Women and the Poor: An Institutional Analysis of Five Districts in Ethiopia." ***Yale Human Rights and Development Journal*** **13(2): Article 5.**

In most parts of Ethiopia, women are intimately involved in all aspects of agricultural production, marketing, food procurement, and household nutrition. Nevertheless, the view is widely held that women do not farm.

This article focuses on agricultural extension services, drawing on research conducted in December 2007 and November 2008 in five districts: Ofla in Tigray; Dejen and Sekota in Amhara; Yaso in Beneshangul-Gumuz; and Ibantu in Oromiya. The authors conducted key informant interviews and focus group discussions with local government officials at the district and *kebele* level, and with male and female farmers. In total, they interviewed over one hundred people.

The authors show that the gender division of agricultural activities has constrained women's access to extension services. Home gardens and poultry were until recently considered a part of "home economics," leaving women excluded from other kinds of extension advice, training, and credit. The authors highlight several cultural, social, and economic barriers to women's ability to attend community meetings, and to express their priorities and concerns. Such barriers included fear of violent reprisal from husbands, feelings of insecurity about public speaking, a sense that a woman's opinions would not be listened to, and time pressures. Yet, perhaps due to donor or higher-tier governmental pressure to create more gender balance, it was found that women were sometimes "ordered" to attend local government planning meetings.

The authors also found considerable evidence of gender bias in the provision of extension services in their study districts; social distance between extension agents with post-primary educations and illiterate farmers, regardless of gender; and a great deal of resistance to women's empowerment among male farmers.

Moreover, the article points out that agents are evaluated on how many farmers they get to adopt "packages" of crop and livestock technologies and inputs, and so they prefer to work with the household decision-maker, who in a husband-wife household is male. In addition, until recently, extension agents were overwhelmingly male, and cultural taboos restricted their interaction with women. At the same time, there seems to be an overall assumption that gender is a concern of women only. All the staff in sectoral offices assigned to monitor the impact of plans and budgets on gender were women, in some instances rather junior staff members.

In conclusion, the article demonstrates that service provision is not as demand-driven as it might be, and that perception biases about women's roles in agriculture continue to shape their ability to access rural services.

2.4. Seeds of diversity

Tsegaye, B. 1997. "The Significance of Biodiversity for Sustaining Agricultural Production and Role of Women in the Traditional Sector: The Ethiopian Experience." ***Agriculture, Ecosystems and Environment*** **62: 215–27.**

Despite the high level of diversity observed across multiple farming systems, Ethiopia's rich crop genetic resources had been under serious threat during the 1970s and '80s . The main causes for the loss were drought, deforestation, destruction of habitat and ecosystems, changes in agriculture and land use, and displacement of native cultivars by new high-input varieties. The effects of genetic erosion were more serious in cereal-based farming systems. The author points out the implications of high-input technologies with regard to subsistence farming in Ethiopia.

Drawing from the results of a program launched in 1989 by the Ethiopian Biodiversity Institute to conserve, enhance, and utilize in-field diversity, this article discusses strategies to promote productivity while maintaining genetic diversity. It suggests that policy makers needed to pay more attention to farmers' strategies of spreading risk through time and across space. The main strategy was crop diversification and/or a multiple cropping system, which had been well developed by the farmers over a long period of time. Diversity is the main feature of these farms and the advantages farmers gained from the system included: (a) it ensured harvest security; (b) it provided variable dietary supplements; (c) it staggered the timing of labor requirements and harvest; (d) it made use of the diverse agro-ecological conditions; (e) it maintained soil fertility; (f) it provided an alternative source of income; (g) it was a source of feed for livestock; (h) it was a source of firewood; (i) and it also provided construction materials (e.g., houses, fences, farm tools, and furniture).

The article further explores the roles women played in the development and conservation of crop genetic resources, arguing that women farmers had a tremendous wealth of knowledge in the identification and characterization of the various crop plants they were dealing with. They had articulated vernacular names for each crop type and even cultivar/variety. In wheat growing areas, they classified varieties according to specialized uses. Women were part of the traditional small-scale production system, for example, contributing or being responsible for field preparation, planting, weeding, manuring, harvesting, transporting the harvest, threshing, seed selection/sorting, and the storage, processing, and marketing of grains. Women therefore need to be active partners and beneficiaries in the development and/or conservation of plant genetic diversity, including decisions on what to grow, seed selection, the introduction of new types of fertilizer and other inputs, and the exchange of information.

Tsegaye, B., and Berg, T. 2007. "Utilization of Durum Wheat Landraces in East Shewa, Central Ethiopia: Are Home Uses an Incentive for On-Farm Conservation?" ***Agriculture and Human Values*** **24: 219–30.**

The study was conducted in central Ethiopia in the Akaki and Lume districts of the East Shewa zone in Oromia in 2001/02. In the study districts, durum wheat landraces were once popular, but had been displaced and re-introduced. Combinations of survey techniques were employed to document the different home uses of durum wheat landraces and to assess whether they served as an incentive to on-farm conservation. Interviews were conducted at the farmers' residences and both the men and women were interviewed. Women were of particular interest because they assumed the responsibility of food preparation and were known to be more knowledgeable about the food processing and cooking qualities of the landrace varieties.

The specific objectives were to (a) document home use values of durum wheat landraces for farm households, (b) reflect on the relationship between the richness of food traditions (more diverse home uses of multiple landraces) and the level of diversity in the field, and (c) suggest possible measures that would help to support on-farm conservation.

The highly valued culinary qualities of traditional landraces included taste, nutritional quality, baking quality, appearance, the shelf life of the cooked product, and brewing quality. Those were found to be the reasons why farmers had in the past been—and were once again—interested in maintaining traditional landraces.

The findings reveal that durum wheat landraces have multiple dietary and socio-cultural uses that contribute to the maintenance of landraces on-farm. The paper's temporal analysis of

historical information showed that (a) richness in food traditions were associated with a high level of landrace diversity on-farm; (b) food traditions in East Shewa had not changed radically as a result of the integration of farmers into the market economy; and (c) farm households still had an appreciation of, and a preference for, the home-use qualities of the landraces, this despite their long term disappearance and subsequent availability of several improved wheat varieties.

Di Falco, S., Bezabih, M., and Yesuf, M. 2010. "Seeds for Livelihood: Crop Biodiversity and Food Production in Ethiopia." ***Ecological Economics*** **69: 1695–702.**

This article uses farm-level panel data from the central Ethiopian Highlands to investigate the contribution of crop biodiversity on food production. The basic socio-economic, physical farm characteristics, and production data were collected from two rounds (2002 and 2005) of household surveys conducted on 1,500 farm households in 12 villages located within two districts of Amhara. The authors observed data after dry periods and following an incidence of rainfall. They employed a comprehensive empirical strategy that both assessed the relationship between productivity, diversity, and rainfall, and addressed the possible endogenicity of diversity in productivity.

The paper's robust empirical approach suggests that understanding the drivers of on-farm diversity is very important from a policy standpoint (such drivers include land, distance to market, access to infrastructure, agro-ecological characteristics of the operated plots, and farmers' socio-economic characteristics). The decision to increase crop diversity was found to be a function of plot characteristics (plot size, slope, color and fertility of the soil, and overall land size), household characteristics (gender, age, household assets such as livestock, and land size), use of farm technology (fertilizer and manure), tenure security, distance of plots from the homestead, and past experience in terms of rainfall availability.

The authors tested and proved the hypothesis that the correlation between diversity and productivity is positive: increasing the number of crop varieties increased production. Higher diversity systems gave greater yields than lower ones. This effect was stronger when rainfall level was lower, that is, when there was a greater degree of environmental stress. When farmers expected harsher environmental conditions, they increased crop diversity to reduce the risk of crop loss and maintain productivity in their agro-ecosystem.

Cavatassi, R., Lipper, L., and Narloch, U. 2011. "Modern Variety Adoption and Risk Management in Drought Prone Areas: Insights from the Sorghum Farmers of Eastern Ethiopia." ***Agricultural Economics*** **42(3): 279–92.**

Starting in the 1990s, the Ethiopian government has pursued a strategy of improving agricultural productivity primarily through agricultural intensification involving increased use of inputs, including seeds of improved crop varieties. Considerable resources have been devoted to the development and dissemination of modern varieties, however, adoption rates have been low, and farmers maintain the use of landraces for many crops and in many areas of the country. Landraces are the product of centuries of selection by farmers and the natural environment. They are typically adapted to specific agro-ecological conditions and usually grown with very low amounts of capital input, such as fertilizer, pesticide, and irrigation. Ethiopia is particularly rich in local crop genetic diversity because it is the center of origin and diversity for several crop species, including sorghum, which is the focus of the present article. Understanding the motivations and constraints of farmers in adopting improved

sorghum varieties, which are designed to reduce production risk, is thus essential in identifying an effective strategy for intensifying agricultural production. The literature shows that risk is a major factor in the decision to adopt modern crop varieties.

This paper explores how agricultural households in the historical province of Hararghe of eastern Ethiopia manage their diverse set of sorghum varieties to cope with risks of crop failure. The authors used a unique dataset, collected during the 2002–2003 drought period from an area rich in local sorghum genetic diversity and with high rates of poverty. The data comprises 720 households from 30 peasant associations (PA) located in the highland and midland regions.

Results show that risk factors coupled with access to markets and social capital drove farmers' decisions to adopt modern varieties. The paper highlights the importance of considering the nature of the risk to be confronted when looking for effective coping strategies. The type of germplasm needed to cope with catastrophic versus chronic risk is different, and this affects farm-level demand for and use of varieties. In this case, it appears that landraces were more suitable for coping with catastrophic risk, whereas the types of modern varieties then available were more suitable for managing chronic risk. The findings also demonstrate the importance of preserving the richness of infra-crop diversity and promoting access to a diverse range of crop varieties in order to facilitate farmers' capacity to manage their risk.

Cavatassi, R., Lipper, L., and Winters, P. 2012. "Sowing the Seeds of Social Relations: Social Capital and Agricultural Diversity in Hararghe Ethiopia." ***Environment and Development Economics*** **17(5): 547–78.**

The manner in which farmers obtain seed and the type of seed and information acquired has implications not only for production and, thus, well-being, but also for the level of on-farm crop genetic diversity maintained in situ, be it interspecific (diversity of crops) or infraspecific (diversity of varieties). This paper presents an analysis of the role of two forms of social capital—"linking" (vertical ties) and "bonding" (horizontal ties)—on two key farm outcomes: on-farm crop diversity and household well-being.

The analysis presented in this paper uses a unique data set from the historical province of Hararghe, an area rich in crop genetic diversity and with high rates of poverty. The data set contains detailed information about infraspecific diversity for two main crops grown in the area: sorghum and wheat. Sorghum is indigenous to the area, with rich local diversity; it is cultivated primarily for subsistence needs and is critical for food security. In contrast, wheat was more recently introduced to the area and is mainly grown for marketing and income generation. Data from a "shock" year (when farmers experienced a major drought and widespread crop failure) provided the authors with an opportunity to explore the role of social capital and seed system participation under stress. Among the "linking" seed system channels, special attention is given to the seed intervention carried out by the Hararghe Catholic Secretariat, which consisted of seed selection, multiplication, and distribution for both landrace and improved varieties of a range of crops.

The results of the authors' analysis have some interesting policy implications for strategies aimed at improving household food security, ex ante and ex post risk-coping measures, and on-farm diversity. The results suggest that interventions targeting different forms of social capital are required depending on the nature of the policy objective.

Cafer, A.M., Willis, M.S., Beyene, S., and Mamo, M. 2015. "Growing Healthy Families: Household Production, Food Security, and Well-Being in South Wollo, Ethiopia." *Culture, Agriculture, Food and Environment* 37(2): 63–73.

In order to explore household well-being in the Ethiopian Highlands of South Wollo, the authors of this paper examined the general state of household nutritional status, as well as food production methods, income diversification, and access to food aid.

Although many studies have focused on the socio-economic and nutritional status of Ethiopians, few have followed the approach of this paper, which incorporates anthropometric measurements and structured questionnaires to explore the links between agriculture, development, and nutrition. Additionally, the research design included interviews with development agents, university faculty and staff, and community leaders from the Ethiopian Highlands. A notable limitation in sampling (though unavoidable given political tensions) was the reliance on local leaders and development agents for household selection. The research was conducted from May through July of 2010. A survey of 120 households in three districts of Ethiopia's famine belt revealed that a majority of households suffered from severe malnutrition. Anthropometric measures demonstrated that wasting and stunting rates were high.

Generally, farmers in this area, both male and female, had embraced increasing crop diversity as both an agro-ecological method of improving soil conditions as well as a way of mitigating seasonal drought. However, crop diversity was not the only important factor for improving yield for Wollo farmers; often, farmers looked to other inputs, namely irrigation and fertilizer. It is important to mention that women farmers often experienced a host of cultural and institutional barriers to securing capital, which was vital if the women were to purchase capital-intensive inputs such as fertilizer or materials for irrigation. This situation was aggravated by a very strong male presence in the extension system, which was the primary source of capital-intensive inputs. These barriers to agricultural equipment and inputs and information on improved management practices (which was also housed within extension services) limited opportunities for women farmers to diversify their income in the same ways that male-headed households could, so placing them at a greater risk of poverty.

This paper clearly illustrates the important role of gender in predicting how agricultural production is translated into food security and, ultimately, household well-being. Farmer interviews suggest there is a critical need for agricultural extension and research, with an emphasis on addressing gender-related issues, as it relates to crop and water management.

Alemayehu, M. 2001. "Ayelech Fikre: An Outstanding Woman Farmer in Amhara Region, Ethiopia." In *Farmer Innovation in Africa: A Source of Inspiration for Agricultural Development*, edited by C. Reij and A. Waters-Bayer, 28–34. London: Earthscan-Routledge.

This article briefly recounts the story of a woman with tremendous energy and perseverance who spent several decades perfecting and combining indigenous practices of soil and water conservation to build up an intensively cultivated hillside farm in the highlands of North Shewa Zone of Amhara Region. This article highlights some of her techniques and her philosophy of land husbandry. The author was a soil and water conservation specialist at the Bureau of Agriculture in Amhara.

Sixty-three years old when the article was written, Ayelech Fikre was a widow living in Ankober District. She had one adopted son, who was married and had two children. Ayelech was the head of this family. More than 35 years previously, she had inherited about one hectare of farmland when her father died. She grows mainly sorghum, teff, maize, wheat, horse bean, and barley. She had two oxen, one cow, one donkey, and three sheep. On her own initiative, without any schooling or formal training, Ayelech had applied various techniques of land improvement based on local indigenous knowledge and on her careful consideration of what she observed and what she had available to her. These techniques included the construction of stone bunds, soil fertility management, and rainwater harvesting. Ayelech had also developed considerable skill in selecting and storing seeds of sorghum, horse bean, maize, and other crops.

The Amhara Regional Council nominated Ayelech for an award as top female conserver of natural resources in the region, and she received a prize from the FAO and Ethiopian Ministry of Agriculture on World Food Day in October 1998.

Nelson, K.M. 2013. "Analysis of Farmer Preferences for Wheat Variety Traits in Ethiopia: A Gender-Responsive Study." Unpublished Master's thesis, Cornell University, January 28, 2013. https://hdl.handle.net/1813/33780.

It is common for a smallholder farmer to grow several varieties of wheat for different purposes. Farmers grow varieties that are trusted in their area, perform well under their management and the specific conditions, and satisfy their end-use needs. If a variety does not meet these criteria, a farmer is unlikely to adopt it. The acceptability of a variety can vary significantly depending on, for example, the farmer's location, socio-economic status, end-use goals, and gender. Therefore, it is unlikely that there is one "super" variety that all farmers would adopt.

This study highlights gender differences in the Ethiopian wheat production system and determines trait preferences for different segments of the population. Breeding programs mainly focus on increasing yield, whereas traits like seed color, end-use quality, and biomass may also be important to farmers. Surveys from 158 men and 147 women farmers were used to evaluate preferences for six traits of bread wheat: number of productive tillers; density of kernels per spike; resistance to rust disease; size of grain; color of grain; and price in Ethiopian birr per 100 kg bag of seed.

The author emphasizes that there is significant potential to increase production on small-scale farms with improved technology, such as disease resistant varieties, soil fertility management, and weed control. But, without addressing gender-specific constraints and preferences, the full potential may never be reached. Gender is thought to influence varietal acceptance, and therefore it is critical to analyze men's and women's perceived values of both pre- and post-harvest traits in wheat varieties.

Documentation of men's and women's preferences would enable breeders to set priorities that incorporate gender preferences and usage criteria into their breeding process. The result of such breeding measures should produce varieties that can be targeted to specific segments of the population, such as subsistence farmers, women farmers, or market-oriented farmers.

Yelemtu, F.G. 2014. "The Social Life of Seeds: An Ethnographic Exploration of Farming Knowledge in Kibtya of Amhara Region, Ethiopia." Unpublished Doctoral thesis, Durham University, April 25, 2014. http://etheses.dur.ac.uk/10565/.

The thesis draws on ethnographic research conducted from September 2011 to July 2012 in Kibtya (South Wollo, Amhara region). Following fieldwork, field data were systematically analyzed to draw out key themes and issues using qualitative data analysis software (NVivo).

The thesis argues that perception towards seeds and productivity is not limited to narrow economic evaluations; rather, it is intimately intertwined within a range of socio-cultural activities and farming practices. In most smallholder farming traditions of the Amhara region as well as in Kibtya, seed-saving is not only about consumption or having seeds for planting next season, but it is also related to satisfying diverse needs, including preferred crop residue for animal feed and roofing for cottages, saving particular types of seed for cultural and spiritual activities, and ensuring social position and prestige through saving as many diverse seeds as possible.

For Kibtya farmers, there seems to be a number of criteria in deciding which crops to give priority to; they often give priority to crops which fulfil both economic and consumption value at the same time. Farmers seem increasingly inclined towards High Yielding Varieties (HYVs) owing to their traits of higher productivity; but at the same time, most farmers are still interested to retain Farmers Seeds (FSs), because they want to have security, independence of seed supply as well as seed diversity for many social, cultural and ecological reasons. This implies both types of seed are not locally understood as objectively good or bad. Rather farmers' decisions whether or not to use a given seed depend on a complex range of factors.

Empirical data reveals how Kibtya farmers have been using local seeds for a range of purposes including for non-material uses such as the process of reconciliation, wedding ceremonies, traditional prayer, mourning, and communal work. Most aspects of farmers' lives are accompanied by social relations, cultural practices and rituals in which use of different types of seeds is associated with satisfying material, social as well as spiritual needs in order to make a fuller picture of life.

Seed saving is related to gender and age in which women and the elderly are often responsible for saving seeds. The thesis reveals that women are the ones who hold double responsibility, as they are involved both in farm and household activities. Almost all informants confirmed that women are responsible for saving seeds, which includes seed selection, storing and making of household tools. Women have detailed knowledge about storing seeds in the right place and in special containers (made only by women), protecting seeds from moisture, rats, termites and so forth. They play a significant role in prioritizing seeds, deciding seasonal plantations and maintaining quality of seeds. They are knowledgeable about different traits of crops. They are also responsible for managing use of crops in terms of deciding which seed variety is to be used for what purpose (consumption, marketing, and planting). Despite men's domination in making decisions and control over most types of resource, it seems that women are implicitly recognized as important decision makers in many aspects of farming life.

> Seed is not something to be stored somewhere as a kind of tool or material. It is sacred and needs to be stored in a right place out of reach of rodents, weevils and irresponsible persons. Some farmers might hide their seeds even from their husbands or wives if they feel the stored seed would be used for other purpose … Seed is life so that it

needs to be shared in a certain manner. Those who saved and share their seeds are life providers, so they are respected. (Farmer interviewee, quoted on p. 133)

I would say that we lost our indigenous seeds just because of carelessness. We were overwhelmed by the productivity of new varieties and we failed to see other aspects. Now we have learned that we should not lose our varieties. For example, when modern variety of wheat is being threatened by disease, those of us who are depending only on such modern variety, we lose wheat production. On the other hand, those farmers who keep their indigenous wheat variety, such as black wheat (*tikur sinde*) saved their wheat seed and got production for consumption, because the disease does not affect black wheat. Hence, I am currently looking for traditional seeds including that of *meke-wheat* and black wheat so that I will seed it and reproduce in my farm. In future, I will definitely have some portion of traditional varieties in my farm so that I won't lose both traditional and new varieties. In this case, I will have security if one variety of seeded grain fails. (Study informant, quoted on p. 143)

Peveri, V. 2015. "The Exquisite Political Fragrance of Enset: Silent Protest in Southern Ethiopia through Culinary Themes and Variations." *Partecipazione e Conflitto (PACO)* 8(2): 555–84.

The bulk of this article is dedicated to oral accounts by Hadiya farmers of the agricultural practices associated with enset (*Ensete ventricosum* (Welw.) Cheesman) and its implicit, subversive political value. The article is based on long-lasting ethnographic research conducted in the Hadiya zone, Southern Nations Nationalities and Peoples' Region (SNNPR), from 2004 to 2013. The material is mostly taken from the author's participant observations made during fieldwork in the village community, as well as semi-structured interviews, administration of a dietary diary, and mapping of fruits, plants, and animals that are considered traditionally useful in the local diet.

Enset cultivation is not simply a mode of production but a way of life. Moreover, enset agriculture is a mode of production designed for subsistence rather than the market. It is cultivated mostly by smallholders for food, fiber, animal fodder, building materials, and medicines, and is a major staple food for over 20 million people in southwestern Ethiopia. In terms of food and economic security, enset has been described by farmers as a 'bank." Its persistence, or resilience, in extreme situations plays a vital role in environmental conservation.

The enset, symbolically linked to peasant identity, is also closely tied to gender. Personal observation in Hadiya by the author, as well as ethnographic accounts of neighboring areas, show that women are involved at every stage of the plant's preparation and harvesting. The area where enset is grown is entirely managed by women. They have the right to keep for themselves the income from the sale of products and materials extracted from enset; women also own the tools used to transform it into food, and men are explicitly prohibited from handling these tools. In wealthy families, women are entrepreneurs and organize the workforce; poor women, on the other hand, sell their work in the plantations. Harvesting is usually carried out by small working groups, formed by women who maintain friendships or kinships mostly along female lines. The process is controlled by an elderly woman, who wanders through the plantation ensuring that each step is done correctly. The women's working groups can be defined as resilient or tenacious, resistant to shocks and risks, able to provide women with reliable and mutual support.

These activities documented in this article provide evidence as to what extent women are the actors who have the richest practical and theoretical knowledge about the enset plant. The women's devotion to the plant is strong, as shown by the way in which they speak of the value of enset: "People here in the village do not eat *wasa* [enset bread] out of necessity, but because they prefer it to other foods, even if the latter are available. If farmers eat *wasa* it will be digested after a long time, because it gives warmth and energy, and so they will not be hungry. With *injera* you will be hungry." And again: "The work on enset is hard, but we women love it more than men do: if there is *wasa* you can eat for many months; if at home there is teff, it soon vanishes. Fifty kilos of teff go in just two weeks. Men do not think in these terms, they do not understand the value of enset. They are interested in the immediate income; the women, on the contrary, have a long-term view."

The article provides an emic approach to hunger, food security, and poverty, while at the same time analyzing a national rhetoric that appears to hierarchically organize the discourse, with/placing the natural wilderness (the peasants, the women) at the bottom and civilizing progress (the townspeople, the men) at the top . The author shows how the means of food production are symbiotically connected to the creation of womanhood. The enset and the women farmers, both of strong physical and moral constitution, are located on the periphery of farming systems. Nevertheless, they represent examples of resilience in challenging situations: the enset plant as a sustainable food against hunger, and the women farmers, slow but persistent, as a potential breaking point in the mainstream politics of development.

Peveri, V. 2016b. "Patriarchy Upside Down: Land and Love Calculations in Hadiya." In *Movements in Ethiopia, Ethiopia in Movement. Proceedings of the 18th International Conference of Ethiopian Studies*, edited by E. Ficquet, A.H. Omer, and T. Osmond, 2:247–58. Los Angeles: Tsehai Publishers.

This article focuses on the term *patriarchy*, which is typically used to indicate the generic subordination of women. This mode of representation is put into dialogue with data that the author collected during ethnographic research in the Hadiya zone, Southern Nations Nationalities and Peoples' Region (SNNPR), between 2004 and 2009, having maintained a privileged relationship with 15 women of a village community. Ordinary voices of female agents in relation to crucial aspects of marriage and gender relationships are reinstated into the debate.

In Hadiya, the bride moves into the compound of the groom according to a virilocal system. In a sense, she loses her chronological age and enters into the man's lineage as newborn and foreigner; she is at the very beginning of a journey towards prestige and social recognition. The author analyzes the construction of the "ideal" woman by looking at how women gravitate toward male wealth and find themselves in a seemingly unfavorable position. However, although the property belongs nominally to the man, the bride come to have a stake in the game if she gives birth to male children, who in turn inherit from their fathers. Women form roots in marriage and land through legitimate offspring. For the Hadiya women, male children are goods and property, not only metaphorically, but also literally. As one of the author's informant used to say: "For a woman, children are the home, the land, all things. Without children a woman has no glory." These life stories show that women perceive marriage in economic terms. Women do not inherit land, they conquer it. Women become skilled in the art of optimizing their personal opportunities.

In order to highlight the local theories of marriage as a "career," the author discusses the exemplary story of a woman, B.—a widow, divorcee, libertine, midwife, and opportunist—who employed divorce and widowhood to her benefit. This narrative reveals the agency that lies behind Hadiya women's apparent passivity. The tortuous (and successful) performance of B. becomes emblematic of women's power and dissatisfaction. In southern Ethiopia land is scarce and the population grows ceaselessly; women take an active role in circumventing this increasing competition for dwindling resources. This ethnographic account offers a somewhat cynical, yet realistic, perspective of social reciprocity: nothing is for nothing, and female maneuvers often replace protocols that men formally establish and should, but do not, uphold. In the story of B. a role game predominates where those who are formally dependent in fact exert a soft and sometimes inflexible power over the patriarch, enjoying benefits that remain invisible to most people.

3. Conclusion

3.1. Non-Productive Women?

This literature review shows that more research is needed in order to understand the gendered nature of agricultural practice, and to deconstruct notions that remain stubbornly resistant to change, such as the cultural and highly symbolic perception of "the farmer" as an essentially masculine subject. The assumption on the part of Ethiopian governments, community leaders, and development policy makers has usually been that farmers are male, because "men are the providers." As a result of this construction, Ethiopian women have been erroneously referred to by researchers as "non-productive." Hence, the contribution of women was often neglected as marginal. This happened mainly for the following reasons:

- Although demanding, the tasks women perform were non-remunerated.
- Production was wrongly equated to the task of plowing and women are not usually involved with plowing using oxen.
- Cultural norms in rural communities recognized only men as being household heads and having the right to speak on behalf of the family. Consequently, many women were shy and/or uncommunicative with strangers.
- Women were confined to household chores, while public forums were considered as the men's domain. As a result, women did not have the opportunity to talk openly about their contribution to production.
- Sometimes women themselves did not say much about their roles. They considered that everybody knew about it and/or it was not worth talking about.

The nature of Ethiopian development programs also reinforces gender stereotypes. When it comes to the domestic sphere, only women are targeted, reinforcing the belief that men have no responsibility in the home, especially as pertains to child care and reproductive health. The domestic and production spheres overlap at the "household." When the household is targeted by development programs/extension agents, it is men who are targeted in their position as household heads. This is consistent with the position of women in rural Ethiopia, where, by law, the head of the family is a man, and thus the extension organization reinforces the legitimacy of the social status quo, while in reality it is women who do the work and need support.

This is even more the case in grain-growing areas. Given the important role of soil preparation in agriculture, which accounts for about one-third of the total time spent in agricultural tasks, societies in Ethiopia that traditionally practiced plow agriculture have developed a specialization of production along gender lines. Men tend to work outside the home in the fields, while women specialize in activities within the home. This gender division of labor has subsequently generated norms about the appropriate role of women in society. Consequently, although women have an active role in wheat production and processing, they are often not considered as farmers within the cultural perceptions and social framework of Ethiopia.

Following on these assumptions, common extension methods usually approach individual men farmers in their farms or contact groups of male workers when there are field visits. This excludes women, who do not go on field visits except for those organized by the home economics team part of the government's extension agency. Extension agency staff use office hours to conduct training, which may not necessarily suit male farmers' timetables, but suits women's schedules even less so given their drudgery. There is scant evidence that the staff

engage in consultation with farmers to determine their needs in terms of training, technology, or knowledge. The evidence of what would actually work to meet the training and extension needs of female farmers is still lacking. In research conducted at the Awasa Bureau of Agriculture (Sidama zone in southern Ethiopia), 33 district-level development workers were asked

> whether they were making specific provisions to involve women in their extension work. Of the 27 men interviewed, 20 worked exclusively with men, while all the six women interviewed worked exclusively with women. Men prefer to work with men farmers, because "it is socially not acceptable for a man to talk to women and may reflect badly on me"; it is "more difficult," "women are busy, resourceless and ignorant"; and "there are no specific programs for women." Even women workers claim that working with women is more difficult, as women farmers are less accessible and tend to delegate extension activities to their husbands. So, women and men are both trapped within the gender identities that affect the workers as much as the farmers. (Buchy and Basaznew 2005, 248)

Women (both as farmers and development agents) are underrepresented in the current agricultural extension system in Ethiopia. When women farmers are included in extension activities, they are mostly female heads of household. Although it is important to include women from female-headed households, a comparison of only female-headed households and male-headed households provides limited insights about broader gender structures because it ignores the majority of women that live and farm in male-headed households. The current extension system rarely targets women in the latter even though these women often participate in wheat farming activities and decision-making processes. In fact, when the entire wheat production process is analyzed, women contribute more to wheat production than is currently recorded because they are involved in activities that are claimed to be the "sole" responsibility of men (Nelson 2013).

With a view to informing policy and planning, there is considerable scope to investigate the effectiveness of women's participation in farming activities relating to wheat, and how this participation could benefit the community as a whole. Discussions with men and women farmers may show that women take part in almost all farming activities in some role. For example, there is evidence that although women do not typically plow the field with oxen, they are following behind the oxen and breaking up the large clods with hand tools. In addition, women were previously thought to have no role in the on-farm application of chemicals, but the literature shows that women are responsible for fetching the water that will be mixed with the chemicals and bringing it to the field (Nelson 2013, 52–55).

Despite their limited access to agricultural resources, women headed-households are widely recognized as being able to make the food they store last much longer than those of male-headed households. Additionally, female-controlled resources are used more successfully and efficiently for household purposes, which translates to improvements in household well-being as measured through household body mass index (Cafer 2011; Cafer et al. 2015). The literature points to a consistent link between women's (and by extension children's) nutritional status and women's educational level and decision-making autonomy.

A great deal of insight into the gender/livelihood/farming link can be achieved through a people-centered approaches to research that considers seasonal and daily calendars, ensures that the research is both gender- and culture-sensitive, and also accounts for power relations in the study community. For example, in considering women's time, labor, and cultural constraints during the design of research, the following guidelines should be instituted:

- Schedule interviews with women and men on separate days or time frames.
- Invite women to bring their children.
- Arrange activities in the morning when women are relatively less busy.
- Schedule meeting locations that are convenient for respondents.
- Include both female heads of households and women in male-headed households.
- Whenever possible, use women researchers to interview women farmers, but when this is not possible use men researchers who have been trained in gender-sensitive research practices. At the very least, enumerator teams should be gender balanced.

Aside from the papers reviewed, most existing research has failed to gather the following useful information:

- ✓ Understanding the roles of men and women in all stages of wheat production, including the decision to grow new varieties, purchasing/trading/recycling varieties, seed preparation, land preparation, planting, weeding, harvesting, threshing, processing, storing seed, transporting, and selling.
- ✓ Asking farmers to score familiar varieties based on their opinion of how well these varieties perform in the different stages of production.
- ✓ Identifying those subjective qualities of wheat that are relevant to the different stages of making bread (milling, kneading, leavening, cooking) and also identifying why they are perceived as good or bad.
- ✓ Documenting farmers' perceptions of a combination of wheat traits to determine the individual value that each trait has on the product as a whole.
- ✓ Identifying segments of farmers who have preferences for wheat bread-making qualities, or varieties.

There may be contexts where women are prevented from joining development projects due to lack of confidence in speaking up for their rights, illiteracy, or pressure from social norms. It will need much encouragement, stimulation, affirmative action, and even protection to put women into a position where they can express their needs, discuss their expectations, plan their remedies, and work on improvements. An emphasis should not only be placed on incorporating women into the formal agricultural system through community development initiatives and gender-based educational policies, but also on supporting women's own ingenuity with regard to on-farm problem solving.

3.2. Enhancing Genetic and Social Diversity

One of the most promising findings of this literature review is the link between women and genetic diversity (see "Seeds of Diversity" in the annotated bibliography). The literature reveals that the majority of rural women in Ethiopia are farmers and also illiterate, and yet these women make extensive use of oral indigenous knowledge in various domains, including

culture transfer and preservation, population control, child care, agriculture, food security, and food production. Can women farmers also be, rightfully, considered as traditional seed experts?

Women farmers play a crucial role in safeguarding food security at the household level. Women have a particular responsibility in storing grains separately for the purposes of seed, consumption, and sale. Women farmers bring in new genetic varieties from various sources, mainly from neighbors/friends, relatives, or marketplaces. Usually they try unfamiliar varieties in small plots around the homestead for closer evaluation. Women also introduce new genetic diversity by collecting varieties from the wild for domestication; this is common with medicinal plants grown in the home garden. They also mix seeds from various sources. In this way, women create a varying, complex diversity and select new recombinant types. Women usually exchange information at occasional informal gatherings, such as coffee ceremonies, religious festivals, and labor exchange groups. More frequently, women farmers meet and share experiences on their way to and from marketplaces, water sources, and fetching firewood. The traditional knowledge of farm women is not documented and their informal networks and ways of exchanging knowledge remain largely unknown or poorly understood.[8] There is much to be learned from women about diverse farming practices and it needs to be documented before this expert knowledge—passed on through generations in an oral, non-literate form—is lost through urbanization and other forms of migration that break down traditional ways of sharing and exchanging.

The current gaps in research make it difficult to fully grasp the nature and function of local ecological knowledge. With this in mind, an assessment of the contribution crop biodiversity makes to productivity may be a useful entry point into measuring the benefit of a wide genetic base in terms of ensuring food and livelihood security. These issues are of particular importance in countries like Ethiopia. Ethiopia is largely dependent on rain-fed agriculture, has significant crop biodiversity, but also has erratic rainfall. In this environment, enhancing agricultural productivity is a priority in order to achieve food security and reduce the chronic dependence on external food aid. Yet agricultural policies and practices seem to be informed by an underlying dichotomy that simplistically identifies men with technology and farming and women with tradition and home.[9] One way to disentangle such an association would be to understand the existing farming practices that are embedded in informal networks and institutions, particularly those that involve women and are thus invisible to many male enumerators and extension officers. These informal networks and strategies may equally enhance or hinder the success of modern technology adoption, therefore, understanding them in fine detail and great depth is imperative. Additionally, given women's central role in maintaining household food security and regional genetic crop diversity, the value of involving women in in extension projects and discussions about technology adoption should be obvious.

There is much still to be investigated with regard to how traditional small-scale farm diversity is managed and how responsibilities are shared between men and women. The criteria commonly used by women to differentiate crop varieties include grain color, size, cooking

[8] A notable exception is highlighted by the research conducted since 2004 by the lead author of this literature review (V.P.) into women's expertise in enset (*Ensete ventricosum* (Welw.) Cheesman) cultivation. Enset can be described as a woman's crop in light of the strenuous labor that women perform in the processing, cooking, and selling of its products. In the Hadiya zone, southwestern Ethiopia, women are the actors who have the richest practical and theoretical knowledge about the enset plant (Peveri 2015; 2016b).

[9] "The national rhetoric in Ethiopia appears to hierarchically organize the discourse between the pole of natural wilderness (the peasants, the women) and the pole of civilizing progress (the townspeople, the men). ... It therefore becomes of greater urgency to adjust the target by means of a more holistic, ethnographically inspired approach; to collect the (female) peasants' counter-memories, dissenting and yet connected to the semantic structures of the center, which might be symbolically defined as political, modern, and masculine" (Peveri 2015, 579–80).

quality, taste, hardness or softness for grinding, storage life, and nutritional qualities. Women also have specialized knowledge and traditional wisdom when it comes to describing the various qualitative aspects. Their expert indigenous knowledge clearly demonstrates that variety choice is not only driven by risk management objectives, but also by farmers' demand for a range of variety traits, many of which relate to end consumption (e.g., cooking quality and taste).

There is not one single variety that is able to satisfy both consumption and production needs at the same time. Hence, farmers demand multiple varieties to meet a range of objectives. Even if there are no supply-side constraints, farmers are unlikely to adopt modern varieties if they do not provide the attributes farmers need. Several studies have indicated how landraces are still highly valued by farmers despite the introduction of modern "improved" varieties by external agents (extension providers, government agents, etc).

There are several reasons why farmers may prefer landraces over improved varieties. The country's tremendous variation in altitude, temperature, rainfall, soil type, and agro-ecological environments in which Ethiopian farmers cultivate their crops necessitates a wide range of adapted crop varieties, which the formal plant breeding system is incapable of meeting. In general, research efforts to breed improved varieties have primarily concentrated on more favored and high-potential environments in which the increase in productivity and yield response to complementary inputs is high. In contrast, landraces are generally the product of farmer selection for adaptation to specific environments. Such selective genotype–environment interactions can result in crossover effects, that is, changes in the relative performance of genotypes between environments. Such crossover effects tend to be more common in marginal environments and in farming systems with low capital inputs, where landraces are often found to perform better than improved varieties.

Areas for future research and policy considerations include information on the role of

- in-situ conservation of resources to improve the productivity of food crops;
- local practices and gender roles in day-to-day decisions over seeds;
- season by season farm decisions about labor, potential yields, risks, and market potential.

In addition to basic household information, future research can be designed to assess

- the different uses of wheat landraces and the quality traits sought by farmers for making specific dishes;
- whether farmers prefer to rely on their own crop production or on market supply to meet their consumption needs;
- whether and why farmers are currently cultivating landraces, and whether and why they are interested in accessing and maintaining landrace wheats in the future.

A high-level overview of what a checklist to guide the discussions might consider includes:

a) the use of landrace wheats in the past;

b) what the farmers did when the landraces were not available;

c) if the farmers tried to reintroduce landraces;

d) if the farmers observed any differences between landraces and the newly introduced wheat varieties; and

e) the farmers' opinions concerning the reintroduction of landraces.

Empirically assessing the risks associated with adopting either modern varieties or landraces in the drought-prone and highly variable production environment of Ethiopia, and how those risks affect variety choice, is important for planning future agricultural development strategies for the country.

The particular body of literature reviewed here implicitly suggests that masculinity is crucial to understanding Ethiopia's highly patriarchal system that makes women invisible to state actors and presents a major barrier to women's autonomy and equal say in decision-making. And yet, explicit masculinity studies are missing from the literature. If women play a bigger role in decision-making and varietal choice than husbands or extension officers identify, is this a deliberate "invisibilizing" on the part of men, (i.e., they willfully overlook or obscure women's roles) or do women exert influence in covert ways that allow men to take credit for the decision? An action research study conducted through 10 pilot learning districts located in four regions of the country (Tigray, Amhara, Oromia, and Southern Nations, Nationalities and People's Region) briefly touches upon this delicate matter: "Decisions about enterprise mix and technology adoption, including seed selection, are mainly taken by men and in some cases, are negotiated between husbands and wives. The general trend appears to be one of male-dominated decisions in rich and middle households, and joint decisions in poor households. Only in female-headed households do women control the decisions; yet this still tends to be in consultation with their male relatives. It was noted that even though men appear to be in control of decision-making, they usually consult their wives and women have a strong influence on the outcome" (Aregu et al. 2011, 16). Even the fact that plowing is still considered a man's job suggests more knowledge about men's and women's prescribed roles and the impact this has on a farmer's life is needed.[10] Understanding masculine identities and how they are constructed and maintained in public and in private could help to explain some aspects of low productivity or resistance to adopting new technologies and practices.

3.3. Food Preferences: Bringing Taste into Development

The goals and values of subsistence producers may at times differ from those of farmers who produce for cash, just as they differ from those of development planners. Different value systems must be considered during planning. When designing project interventions, the lived experience of most Ethiopian farmers in relation to productive activities, resource use, and household life needs to be better understood. Most Ethiopian farmers typically do not compartmentalize their lives as readily as policy makers and implementers; on the contrary, they adopt—and live in—agro-ecological perspectives that bring together community, environment, science, politics, and farming. Broader social relations and economic forces

[10] "There are important differences in the way men's and women's bodies are perceived in relation to farming activities in Ethiopia, on the basis of which narratives of what they can and cannot do as well as the spaces they can and cannot occupy are constituted. Although it is true that gender identity depends on the performance of gendered tasks rather than having a male or female body, narratives about the male and female body and their differences are an important source for the construction and reproduction of gender identities. As Scheper-Hughes and Lock (1987:25) put it, 'societies regularly reproduce and socialize the kind of bodies that they need'" (Gella and Tadele 2014, 8).

shape and constrain farming and food practices, and thereby contribute to the formation and maintenance of taste and food preferences. This literature review shows some of these complex relationships (e.g., between land, seeds, taste, and the well-being of people), which farmers frequently frame not only in terms of production but also in terms of social coherence, cultural values and attitudes, "happiness" (Freeman 2015), and interactions with the environment.[11]

Each crop species and/or variety has particular significance in the indigenous food culture of Ethiopia, as a source of daily diet and of food and drink for special occasions (e.g., traditional, religious, or other social functions). Anthropological literature documents that farmers across Ethiopia frequently identify different uses of crops involving special preparations; and continue to grow thousands of different varieties for specific traits such as aroma, cooking quality, medicinal, and cultural values. These cases demonstrate that richness in food culture engenders the survival of diverse landraces on farmers' fields. Sensibly, farmers maintain a high level of diversity for the major staple crops. In-field diversity of food crops is directly associated with diversity in home use. Each crop species plays a vital role in the daily diet of farm households, and diversity is the means through which food and livelihood security is achieved.

Yet in many cases breeding programs has focused on quantitative yield increments and no attention has been given to qualitative characteristics, such as taste. This has had a serious impact on both producers and consumers—and farmers are both. Despite the immediate cash benefits that might be realized, farmers may still retain a strong preference for landraces. Landraces are typically described by women farmers as having a preferred taste and presenting more options for making dishes and drinks. Local landraces may not be as readily available in local markets, and thus, as consumers, farmers may prefer to produce their own.

Until quite recently, researchers and policy makers generally assumed that landrace wheats were no longer of interest to farmers. Landrace wheat reintroduction programs in a few selected localities have nonetheless proved otherwise, revealing that farmers still have an interest in and a desire to recover the once lost landrace wheats (Edwards et al. 2010, for Tigray; Tsegaye and Berg 2007, for East Shewa; Yelemtu 2014, for South Wollo). From a nutritional point of view, landraces are claimed to be more filling (a meal made from landraces helps farmers go for longer without feeling hungry) and as giving physical strength. Women farmers are witnesses to this as they are solely responsible for cooking, continuously experimenting with foods. Furthermore, it is asserted that landraces have a better storage life. Older farmers comment that the new wheat varieties make them act like "beginners" because of the time required to learn about their different attributes (Tsegaye and Berg 2007, 227).

Understanding consumer preferences is an important factor in predicting the uptake or adoption of new products. This is a well-known concept in private industry, but studies on

[11] A well-off farmer and Muslim religious leader in Kibtya explains: "Seed is not something to be stored somewhere as a kind of tool or material. It is sacred and needs to be stored in a right place out of reach of rodents, weevils and irresponsible persons. Some farmers might hide their seeds even from their husbands or wives if they feel the stored seed would be used for other purpose... Seed is life so that it needs to be shared in a certain manner. Those who saved and share their seeds are life providers so they are respected" (Yelemtu 2014, 133). The Omotic-speaking Ari, enset cultivators of southwestern Ethiopia, are deliberate and accurate in their efforts to keep the diversity of enset landraces. By their folk belief system, both the cultivated and wild populations need to be conserved in a ritual sanctuary. Yet: "The Ari farmers seem to have no specific goal-seeking-intention with regard to the maintenance and selection of landraces except for increasing overall diversity of their ensete collection. ... Their farming activities together with their attitude towards ensete are firmly sustained by their cultural value system. Ensete is not merely a crop for the Ari people to subsist on but one of their cultural heritages which induce them to possess large numbers of different landraces" (Shigeta 1990, 106).

consumer preference are relatively less common in the public sector, which is usually responsible for producing wheat varieties in developing countries. The majority of wheat breeding programs focus more on increasing yields and less on consumer-driven research. A shift toward understanding the needs of consumers and how products can fill gaps in the existing market, or how products can create demand for new markets, is long overdue.

In order to specifically capture the point of view of women farmers, a great deal of attention should also be devoted to the traits of wheat varieties that relate to their home use, for example, taste, nutritional quality, baking quality, ease of processing, appearance, shelf life of cooked product, and brewing quality. Further research will be necessary to collect and verify

- (a) the claims made by farmers concerning culinary qualities, in terms of both the expected quality (visual cues) and experienced quality (organoleptic evaluation, such as taste and smell);

- (b) how farmers rate and explain nutritional quality;

- (c) how materials (seeds) and associated knowledge (experience) are exchanged and shared;

- (d) dishes and drinks prepared from familiar and unfamiliar wheat varieties (recipes).

These exercises would be valuable for understanding what participants look for in determining whether a quality is "good" or "poor," and how this is measured descriptively using non-scientific standards. A strong focus on quality testing could be useful in revealing the relationship between end-use quality and adoption of improved varieties, as well as the difference in trait preferences between men and women based on their gender roles in the household.

3.4. The Holistic Approach: A Concluding Remark

This review has revealed that surprisingly little information on farmers in wheat-based livelihoods can be found in the scientific and agricultural literature. Admittedly, the commitment of the Ethiopian government to agricultural extension is unparalleled in the African continent, and this is reflected in the prominence of Ethiopia's experience in the wider literature concerning agricultural productivity and extension practice. This literature takes scant account, however, of the voices of farmers, diverse men and women who struggle, on a daily basis, to protect, strengthen, and represent their livelihoods within (or at the edges) of state structures. New relationships, alliances, and networks may open up opportunities for farmers if they could raise their voices and be heard. They make claims for livelihood and food security; they make suggestions about how things should be done; they express their concrete concerns, draw on tradition and experience, and introduce new ideas. Yet, these voices have only rarely been recorded so far.

The broader anthropological literature and research that uses participatory and ethnographic methods provides the most telling information on the lives of farmers. It shows that farmers possess competence, skill, and experience, but that they frequently lack interconnectedness, opportunity, visibility, and audibility[12]. An anthropological approach to the lives of farmers

[12] "Competence goes beyond ideas of social, economic or political capital to embrace Sen's notion of capability, interconnection and agency (Sen 1999:87). It sustains a livelihood during the good times and provides a bulwark against

will improve our ability to discern who has gained and who has lost agency; who is too old, too poor, too marginalized, or too invisible to speak effectively.

These knowledge gaps reflect the dichotomous thinking of farm/house; male/female; modern/traditional; good/bad; qualitative/quantitative. This review suggests that bringing these seemingly opposing views together is overdue. Research that explores the boundaries of these dichotomies, discourses, and ways of thinking would be useful because it also shapes how we see gender roles, relations, and responsibilities, and the part these play in agricultural interventions. The food security of Ethiopian farmers surviving on wheat-based livelihoods requires a more holistic approach.

the bad times. ... This support signals the existence of the capabilities which allow a household or individual to address and reduce the vulnerabilities they face, on their own terms" (Brocklesby et al. 2010, 30–31).

4. Annexes

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