

Soil fertility and crop theft: changing rural dimensions and cropping patterns

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Abstract

Farmers globally and those in Ethiopia in particular, are facing a number of challenges on top of the obvious physical and economic constraints in managing soil fertility. The majority of the studies conducted on soil fertility issues in Sub-Saharan Africa (SSA), have studied the cause and effect of soil fertility changes to the biophysical conditions, farmer's economic incapability or macro-economic policies. What is less well understood are the challenges that farmers face at the household and community level, the blind-spots that hamper farmers from practicing soil fertility management. This study reflected on how thievery, especially theft of legume crops is affecting not only soil fertility but also other socio-economic and cultural aspects of day to day life. Crop theft requires us to extend our thinking beyond climate and seasonality, especially in agrarian societies. Theft of crops in rural areas seems to be largely related to food insecurity, both the transitory type as well as the chronic variant.

Key words: beans, crop rotation, Ethiopia, food security, soil fertility, thievery, women

Introduction

Land and livelihoods in Sub-Saharan Africa

Studies from Sub-Saharan Africa (SSA) show trends in the decline of soil fertility and attribute this decline to a number of reasons. These reasons range from historical legacies, political systems exercising poor policies, conflict over resources, climate change and low human capital (Sachs & Warner, 2001; Collier 2007). Declining soil fertility is not only recognized as a major biophysical root cause of the declining per-capita food production in SSA but also as a major contributing factor to food insecurity and conflict (Lemenih, Karlun & Olsson, 2005).

Farmers as well as pastoralists are painstakingly aware of the declining soil fertility and the impact it is having on productivity and their livelihoods (van de Pol, F. 1992). The majority of these farmers farm small landholdings with access or no access to common land. The issue of land ownership and land tenure in Africa is an unfinished story and to date many farmers hold neither title deed over their landholdings nor are they able to reverse decisions made for them without their informed consent. This aspect adds to the uncertainty that farmers have to contend with including other constraints viz. 1) agro-climatic and physical factors such as seasonality, soil fertility, geography and infrastructure; 2) economic capital to purchase external inputs; 3) political including policies, institutional organization, operational land tenure issues and 4) social-cultural issues.

To address these challenges smallholder farmers have developed a repertoire of *indigenous* soil fertility management techniques. The word *indigenous* and definition of *indigenous knowledge* is the result of years of experimentation and adaptation to various environmental factors (de Boef et al., 1993). Some commonly practiced *indigenous* soil fertility management include: crop rotation, intercropping, use of organic manure, household refuse and agro-forestry. To what extent *indigenous* soil fertility management is effective in maintaining soil fertility depends on how the practice is carried out (Elias and Scoones, 1999). Some studies (Elias and Scoones, 1999; Beyene, et al., 2001) have shown that soil fertility decline in Africa is not universal, but site, farm plot and context specific. Farmers apply one or combinations of *indigenous* soil fertility management with or without modern techniques such as chemical fertilizers either on part or all of their plots depending on purchasing power, gender, labour availability, crops grown, land tenure and the distance of their plots to the homestead.

Soil fertility management decisions are complex because these decisions are not only dynamic but also highly influenced by a range of factors. They include climatic, social, economic, cultural and political conditions prevailing at local, regional and international levels all affecting the decision-making of farmers such as whether to invest or not to invest in soil fertility management. Defining the processes of soil degradation is,

therefore, not simply a matter of analyzing the stock of soil nutrients but also investigating and understanding how these changes occur in order to locate useful intervention strategies in the existing indigenous knowledge base. This calls for broader approaches in analyzing the socio-economic and bio-physical factors affecting soil fertility.

The Ethiopian Highlands

The Ethiopian highlands are one of the few geographical regions that are still regarded as areas with productive rangelands (Scoones, 1994). This is largely due to the historical, cultural heritage and practices that specific ethnic groups have employed to control and manage these rangelands (Reij & Scoones, 1996). Several authors have illustrated the Borana's form of environmental management based on the *gada* system that organizes men and women into certain responsibilities to the wider society ranging from security issues to practical environmental issues such as the use of and access to land or water depending on seasons (Legesse, 1973; Watson, 2003; Black & Watson, 2006). However, Black and Watson argue that when these institutions are interfered with politically, problems will arise due to misplaced assumptions about these institutions. Ethiopia unlike other countries in Africa has the advantage of never being colonized, thus enabling the strong establishment and continuity of indigenous institutions whose mandate was to guide and safeguard *communities*. Notwithstanding, Ethiopia has experienced strong influences of political inferences in the management of natural resources. The current leadership in Ethiopia has emphasized decentralisation and participation with federal models structured along ethnic lines, so that communities feel empowered to manage their resources in order to achieve self-sufficiency and security.

Indigenous soil fertility management and crop theft

The majority of the studies conducted on soil fertility issues in SSA, have studied the cause and effect of soil fertility changes to the biophysical conditions, farmer's economic incapability or macro-economic policies. Farmers when confronted with issues of seasonality and climatic conditions in a state of weak socioeconomic systems any crisis they experience is amplified (Clay 1981). What is less well understood are the challenges that farmers face at the household and community level, the blind-spots that hamper farmers from practicing soil fertility management.

It is generally accepted that the presence of crime in an area may discourage legitimate business (that is business not dealing in prohibited activities such as hard drugs or weapons), hence further exacerbating poverty (Fafchamps 2006). The theft of crops and livestock assets during food crisis often associated with seasonal hunger, and transitory disasters has been reported in several studies (Chiwona-Karlton et al., 1998) but the systematic effect of thievery on soil fertility management has not been reported on. Thievery, especially crop and livestock theft, is often associated with coping mechanisms

in times of food shortages or complex crises or during disasters, natural or man-made (Chiwona-Karltun et al., 1998; Chiwona-Karltun et al., 2005; Mkumbira et al., 2003) . Crop theft is usually treated with scepticism as a coping mechanism in times of hardship since there is the tendency to link it with seasonality or transitory food insecurity. But when examined more closely as done by Fafchamps (2006) “crop theft is systematically related to increases in transitory poverty... these findings survive even after controlling for changes in law enforcement”. Furthermore, the studies showed a strong association between changes in isolation – measured by changes in transport costs to the nearest town – and crop theft. It is unquestionable that crime and conflicts takes a heavy toll on the welfare of the poor in developing countries. Following Fafchamps studies in Madagascar, this article examines the impact of bean theft on soil fertility management that impacts food security and ultimately poverty in the communities under study. In this study, we describe how theft of legume crops, particularly beans became such a serious social problem and how that affected, cropping patterns, food availability and habits, soil nutrient management practices, gender and human relations, indigenous institutions and the livelihoods of farmers in southern Ethiopia.

Materials and methods

Study area

The study was made in the village Beseku, situated approximately at 7°20' N and 38°45' E, and about 240 km south of the capital city, Addis Ababa. The farm fields used in this study lie near the bottom of the Rift Valley eastern escarpment at an altitude of about 2100 m a.s.l. on a flat topography. The rainfall has a bimodal distribution and the short rainy season extends between March and June and the major rainy season between July and October. According to the meteorological records at Degaga (2000 m a.s.l) 9 km from the study area, the mean annual precipitation is 1 075 mm and the mean annual temperature is 15°C. The soils of the area are developed in volcanic ash deposits from quaternary volcanic activities in the Rift Valley and its surroundings and they are classified as Mollic Andosols (ISSS-ISRIC-FAO, 1998) or Humic Haplustands (Lemenih, 2004).

Farming and population history of Beseku

The original inhabitants of Beseku are the Arsi Oromo (Ensminger, 1990). With the transition of the different political regimes, other ethnic groups have voluntarily or involuntarily moved into the area as a result of resettlement schemes during the Derg period or due to increasing population pressures elsewhere, especially from the Northern Shewa region (Tolera, 1996). Today Beseku comprises a mix of Arsi Oromo, Shewa Oromo and Kambata ethnic groups. Settlement farming in Beseko has a relative short history compared to the central or northern plateaus of Ethiopia. Consequently, farmers in Beseko do not have long, extensive farming experience. The natives of the area, the Arsi

Oromo were pure pastoralists just 30-35 years ago, and thus the tradition of crop cultivation draws upon the experience of only two to three generations. Farming was established in the area with the progressive invasion of the northern Shewa Oromo people coupled with population growth.

Farming system

The predominant farming system in Beseko at present is a mixed crop-livestock production system. Important crops grown include: maize, wheat, sorghum, barley and potato with the main staple crop being maize. Maize has slowly taken over sorghum and barley as the policies and infrastructure for producing maize have become more and more favourable at the expense of other crops. Important livestock are cattle, horse, and donkey, with these three being used as draught power as well as for transport while sheep and goats primarily for income generation.

Data collection

Data collection was stratified according to the type of information collected, starting with a randomised household semi-structured questionnaire survey. This was followed by key informant interviews, in-depth interviews, group interviews and focus group discussions. The data was collected during the months of February 2007 to June 2008. Part of the data was collected during the main questionnaire survey conducted in 2006 while major data collection was collected during the group and focus group discussions in 2007 and the first half of 2008.

Semi-structured interviews

In the main survey of the study, information was collected on soil fertility status, perceptions, knowledge and constraints to sustainable agricultural production in the area through individual interviews using structured questionnaires. In the structured interview 100 households were randomly selected. The selection was made as follows: list of all household heads living in the study area was acquired from the Peasant Association (PA) office, and with the help of key informants (village elders and PA leaders), the households were grouped into three wealth categories: poor, medium and rich. Finally 36, 35 and 29 households from poor, medium and rich wealth categories, respectively were randomly selected. Both male- and female headed households were interviewed. The selected households represented wide age classes (Table 1). The questionnaire was first developed in an English version and thereafter translated to the local language (Oromiffa). To check the quality of the translation and to be able to resolve any linguistic and interpretational ambiguities, the questionnaire was re-translated into English using an independent translator and final corrections made in the Oromiffa version. We trained 10 enumerators (5 men, 5 women) from the village to perform the interviews and they worked in pairs, one male and one female.

Key-Informant Interviews

Based on the results of the structured interview, a checklist of questions was prepared on topics that required deeper probing and clarification for the in-depth interviews. The in-depth interview was conducted with five key informants. In addition, after summarizing results of the structured survey and the follow-up in-depth interviews, an extensive checklist was constructed on topics that were identified for the focused group discussions.

Focus Group Discussions

Based on the findings and impressions gathered from the questionnaire survey and in-depth key informant interviews, participants were identified for participation in the focus group discussions. Seven focus group discussions were carried out. The first six were separate three were conducted separately with only men or women participating. The last group discussion was a mixed men and women group. Identification of households to invite and include in the focus group discussions was made based on the existence of three distinct groups on the basis of ethnicity and religion represented in the area. Groups comprised 8- 12 persons, except for the last group that had 20 participants. The in-depth interviews and focus group discussions were tape recorded upon the consent of the interviewees, and were later transcribed.

Data analysis

The data obtained from the questionnaire survey were fed into a database and analyzed descriptively, whereas qualitative data collected from the interviews and focus group discussions were transcribed in Orominfa and translated into English. For each interview, there was an interpreter, a note taker and a moderator that conducted the interview to ensure the smooth flow of the conversation. Each interview and discussion was tape-recorded digitally and transcribed manually into running word texts. The texts were analysed for content and emerging themes that have been categorised. Where deemed important to illustrate the discussion points, direct quotes are presented.

Results

Three main themes emerged from the survey and the interviews. These were: 1) shifts in cropping patterns; 2) declining land availability and 3) increasing insecurity and crop theft. Farmers indicated in the interviews external factors viz. changing socioeconomic conditions, agro-ecological shifts and the geopolitical arena as the main factors affecting these issues.

Shifting cropping patterns during the past 30 years

Farmers in this study area have been forced to abandon growing barley and sorghum to actively growing wheat and maize, and to some extent Irish potatoes. The biggest change is the extent to which maize is replacing other crops, particularly the traditional cereals barley and sorghum. Reasons given for this shift included the availability of inputs specifically, high yielding seed for maize, timely availability of fertiliser, ease of marketing and yield. This had resulted in a dominance of maize production, significant reductions in barley and hardly any bean production (Table 2). Farmers also stated that the changes in cropping patterns had deeply affected their food habits and farming systems.

According to the information gathered, beans were among the common crops grown by the farmers of Beseko less than a decade ago. However, in recent years the cultivation of beans has gradually and almost entirely been eliminated from the cropping system because of theft.

Analysis of the types of the crops in the crop rotation indicated that very few farmers are incorporating nitrogen-fixing legumes (Table 3). The farmers predominantly rotate maize-wheat-sorghum, while beans, the only nitrogen-fixing plants that used to be part of the rotation system in the past are no longer being grown. The farmers also mentioned that beans were an important crop that used to be grown in the crop rotation system to maintain soil fertility. Any crop grown after beans used to give good yield. Due to the discontinued bean production, the farmers in Beseko mentioned that they are forced to use fewer crops especially crops that have soil improvement features. Today, the crops grown are predominantly maize, wheat and sorghum in crop rotation. According to the farmers, the lack of beans in the farming system, coupled with increasing fertilizer prices and changing climatic conditions, is threatening their agricultural productivity at large.

Declining land availability

There has been a steady decline, especially of common grazing land which in turn has led to reduced numbers and change in livestock management. Traditionally, the people of Beseko were pastoralists, but as land holdings have continued to decline, they have been forced to become settled farmers. Furthermore, the forest lands around Beseko, have been converted to farm land with little or no common land available for herding livestock. This has been attributed to increasing population and the need to convert previously non-farming land such as forests into farm land. Due to this intense use of land, farmers find it more and more difficult to predict rainfall patterns and the scarcity of water has brought new challenges for farming. As a result there are also changing practices in the management of livestock. Women and children have had to saddle on

more chores, tending livestock at home. This change in livestock keeping has had some benefits for women, donkeys available for draught power, collection of water, and manure being more readily available for the home gardens.

Soil fertility was perceived to be a less pressing problem than land shortage, vermin and wild animals, soaring fertilizer prices and/or timely unavailability of inputs (seed and fertilizer) and theft. Farmers commented that had it not been for the price, availability of chemical fertilizer and the theft of legumes, soil fertility decline would have been a minor problem. Although farmers in this area are practicing traditional and modern soil fertility management these are all affected by socio-economic factors. Most notably is the untimely delivery of inputs for other crops than maize. Both seed and fertiliser, coming after the planting season is over or not being available at all when it is the planting season. For many farmers timely planting became a guessing game since they could not plan for the availability of the inputs.

Food insecurity and crop theft

Beseko community was described by the farmers as a very suitable area for crop production. To express the high suitability of Beseko for a variety of crops, the farmers described it as '*a site where you could grow anything but salt*'. However, the surge in thievery was repeatedly indicated in all of the interviews as an emerging major challenge facing agricultural production systems, crops and livestock. In one focus group discussion the words *thief*, *theft*, *steal* and *stolen* were mentioned 58 times by the discussants. The problem of theft was stated as having escalated with declining landholdings, poverty, youth not having any employment and the changing times. The changing times included prolonged hunger periods, food shortage and the exorbitant cost of beans. Although common to all crops and livestock, thievery, was a serious problem when it came to bean and pea cultivation for two reasons:

- 1) Beans are consumed fresh/green while in the field and because of this consumption in the field, by everybody (adult or children) passing by a bean field. However, the magnitude with which this practice was being conducted had now become theft, and not simply tasting. There was a proverb that farmers used to describe this practice, "*bean fields and pretty girls cannot be passed by without picking and tasting*".
- 2) Beans were often grown on small family plots. This small scale production of the crop meant that if many people were picking or stealing, there was little left for the family to harvest at the end. It also meant that households would have no beans available for making the sauce for the staple dish *injera*.

Consequently, farmers in Beseko decided to stop growing beans to avoid conflict, and to preserve human security and community integrity as expressed by the farmers. Furthermore, efforts to stop offenders (thieves) often resulted in community scale conflicts due to the strong kinship bond among the different groups or clans living in the area. The theft of beans had far reaching implications on the household as outlined below.

Impact on household nutrition and health

Beans comprise the daily diet of most Ethiopian dishes for the preparation of the sauce that accompanies the traditional staple food *injera* meal. Both men and women in Beseko stated that their dietary habits were changing due to the absence of beans in their farming system.

“The main dietary-related problem facing us is not what to eat in terms of bread or cereal but what to eat with it - the sauce”. The farmers further elaborated this problem, *“nowadays it is expensive to buy peas and beans from the market for making the sauce,” and at times we are forced to just eat the injera bread without sauce, this is made worse by the fact that the injera is no longer made from teff but from maize”*. A kilo of beans at the market was 18 Birr (1 USD = 7 Birr) during normal times and this price was increasing especially now that farmers were no longer growing beans. The farmers also indicated that the frequency of ill-health of family members and the frequency of clinic visits, particularly for young children and the elderly were more common, and they attributed this phenomenon partly to the dietary changes, changing times and socio-economic factors.

Impact on household economy

In addition to being an important food crop, beans were regarded to be some of the crops that fetch higher prices than any other crop grown in the area. Farmers indicated that 100 kg of beans were sold on the market for 400-600 Birr (2008), depending on the season. This price, compared to maize was much higher, that was sold at 100 - 180 Birr for 100 kg of grain, a three to four-fold difference. Consequently, the farmers disappointingly expressed the economic loss faced by their households ever since they had stopped growing beans.

Due to the theft of crops households were forced to buy beans from the market at the higher prices. This meant that households had to sell other crops, which were of lower value in order to buy the beans required for the making of the sauce. As one of the farmers explained,

“we have to sell a sack full of maize to be able to buy a small bag of beans we are devastated economically as beans are taking away our crops, wheat and maize, because

we have to sell our wheat and maize to buy beans. Beans are robbing and exhausting our maize and our wheat". This is causing a high pressure on the meagre financial resources of the households.

Conflict within households (wives and husbands)

As indicated above beans are an important accompaniment for the staple dish *injera* in Ethiopia. While the husbands demand the usual full meal: *injera* with *shuro*, bean or pea sauce, the wives could not offer this dish because they did not have the beans or peas at hand. The women's focus group discussion revealed that the unsatisfied husbands were using "*the lack of shuro*" to instigate conflicts with their wives. The same problem was confessed by the husbands in the women-men joint focus group discussion. The men confessed that their wives did not have beans or peas at hand or the financial resources to supply the dish of their desires

"We fail to see that it is not the women's own making" and they expressed this act as *"our own foolishness"* and *"lack of understanding"*.

Discussion

Shifting cropping patterns

The lack of improved high yielding seed coupled with the untimely delivery and availability of inputs, viz fertiliser has forced farmers to abandon crops such as barley, and sorghum. More and more farmers in Beseko are growing maize and wheat because of the readily available inputs, i.e. high yield seed and fertiliser, as compared to the availability of inputs for the traditional crops. The provision of inputs and conducive policies for specific crops like maize in Sub-Saharan Africa has seen the neglect of other important crops and the complete dominance of maize over vast areas (McCann, 2001). Ethiopia has not been spared from this "*mazification*", despite being a centre of genetic diversity; Ethiopia is now one of the leading producers of maize in SSA (Byerlee & Eicher, 1997). What was most striking in the discussions was how farmers lamented that they had been taken over by maize, to the point that their cropping patterns, especially inter-cropping practices had changed. This was further exacerbated by the theft of beans leading to an imminent change in their dietary habits. The dominance of maize in the cropping system and lack of beans in the crop rotation has also had an impact on the soil fertility and management practices in Beseko. The most devastating effect is the omission of nitrogen-fixing plants in the crop rotation system. With the rapidly changing agro-ecological conditions of farming in Ethiopia, the farmers decision to stop growing beans poses further challenges for the food security of these households. In fact, amongst grain legumes, *faba* bean, the bean type grown in the study area, it is one of the best N₂ fixer and an important role in the maintenance of soil fertility in the wheat and barley cropping systems in the highlands of Ethiopia (Hailu *et al.*, 1989; Amanuel *et al.*, 2000). For

instance, a study by Amanuel *et al.* (2000) in Ethiopia showed that a total amount of N₂ fixed by *faba* beans range from 139 kg N ha⁻¹ to 210 kg N ha⁻¹ across different sites.

Declining land availability

With increasing population many farmers have had to change from being pastoralists to being active settled farmers. Ethiopia has also historically enacted a land reform policy in 1975 that saw the movement of people from the north to the south and to more concentrated settlements in order to access services. Article 18 of the 1975 land reform proclamation included “village formation” and land settlement (Ofcansky & Berry 1991). Land settlement also included moving rural inhabitants from drought prone areas to fertile areas such as Beseko and it also entailed distributing land to landless peasants. The whole aim of the village formation process was to enhance food security; however, it would seem that the planned move did not fully consider the implications of population growth and the contestations to come related to access to land and changing socioeconomic conditions.

The change from livestock keeping to settled farming has resulted in many more households engaging in farming, with the size of landholdings getting smaller and smaller (Pankhurst 2001). Combined with crop theft and diminished land holdings many households have found themselves in “landless” positions a situation that is becoming prevalent in Sub-Saharan Africa (Ellis 2002). Off-farm incomes and diversification is very important for escaping out of this natural resource trap (Collier, 2008) and for many rural Ethiopians their livelihoods continue to remain undiversified (Devereux, 2000; Teklu 2004). In agrarian economies, seasonal availability of fruits and foods depend a lot on cropping patterns, e.g. if an area experiences short rains or practices winter cropping this greatly reduces the hungry period. Studies in Bangladesh showed that monsoon *aman* rice crop accounted for over half of cereal production (Chowdury, Huffman & Chen, 1981). In Beseko, the lack of timely provision of inputs for the other crops (sorghum, barley, wheat, *teff*) and the theft of beans caused not only stress for the household, but also conflicts within the households.

Food insecurity and crop theft

Beans are the most important source of protein in the entire countryside of Ethiopia, and play a major role in nutritional well-being of the population (Desta, 1988). In the traditional perspective there is an interface between children picking beans and this is not considered to be theft, but in Beseku this was done to such an extent that it was regarded as theft. The type of bean theft taking place is very similar to the stealing of “sweet cassava”, in small amounts acceptable, beyond a certain level- a crisis in terms of

managing household food security (Chiwona-Karlton et al., 1998). This extreme form of crop theft impedes food security and development and creates conflict in the community. In this study we see the effects of bean theft occurring on three different levels:

1. Societal/community level – leading to conflict, mistrust and a breakdown in some of the kinship and ethnic relations. A decline in good “soil fertility management practices”
2. Household level – husbands and wives in conflict over the ability of the wife to provide a good meal for the husband
3. The individual/health status – a perceived deterioration of the health status due to poor nutrition

What is striking here is how the theft of a crop like beans causes major shifts not only in cropping patterns but also in human security and food and nutrition security. Dietary diversity is an important indicator in measuring nutrition security. In this study, we show farmers who have moved from a diverse cropping pattern to one that is dominated by maize growing and plagued with crop theft. The combination goes beyond the normal discussion of seasonality, hungry seasons and food shortage. What happens when societies are so weak socioeconomically – and when survival is all about surviving from hand to mouth?

Some have argued that this is a form of smoothing consumption patterns during periods of hunger and thirst for those in need, but not for those affected. As described by the Ethiopian proverb “*you cannot pass a field of beans ripe for eating, it would be like passing beautiful girls without looking*”. The dilemma here seems to be “reasonable tasting”, versus harvesting that can be regarded to be crop theft. Studies conducted by Blurton Jones (1987) and Bird and Bird (1997) on *tolerated theft* namely, food sharing, found that successful foragers shared their catch of the day with unsuccessful foragers based on their consumption thereby observing a diminishing marginal return curve. However, this was observed to make sense only if the cost of not sharing was higher than sharing with others. The assumption of diminishing marginal return curve is consumption of additional amount of hunted animal gives less benefit or satisfaction compared to the initial amount to successful foragers. Additionally, sharing among foragers was regarded as a consumption smoothing strategy in order to minimize ‘unpredictable seasonal fluctuations in household food intake’ (Bird and Bird 1997).

The problem in Beseko had reached such proportions so as to stop growing beans. Thieves were protected people, defended by his/her whole kin/clan, which often lead to large scale risk of human insecurity. Youth were singled out as the main perpetrators but more so due to the hard socio-economic conditions. Fafchamps and Minten (2003) in their studies in Madagascar, found that poverty is a major driver of theft especially in

rural remote areas, people use theft as a risk coping and consumption smoothing strategy. What we find in Beseko confirms what Fafchamps and Minten found.

Due to the beans not being available in the fields and homes, beans fetch a high price on the market, and the rural poor cannot afford beans, an important ingredient in sauce making. Some take matters into their own hands and steal. Others suffer the consequences, while household discord and poor health ensues. Deepening impoverishment follows as farmers and households have to sell more crops to afford the much coveted beans. If this situation is left to its own accord, the consequences in terms of human development, will simply exacerbate the targets intended to address the first millennium development goal, eradicating poverty and hunger. Local interventions with the local indigenous institutions may help to address the issue of crop theft, identified here as a major impediment to soil fertility management as well as food security.

Conclusion

Farmers globally and those in Ethiopia in particular, are facing a number of challenges on top of the obvious physical and economic constraints to manage soil fertility. Notwithstanding, the impact of climate, seasonality and deepening poverty on the livelihoods of these farming households is something that requires understanding so as to formulate the right policies for rural development in Ethiopia. This study reflected on how thievery, especially theft of legume crops like beans, is affecting not only soil fertility but also other socio-economic aspects. Despite the focus of the paper being on beans theft, thievery in general is a major challenge in rural isolated areas. Crop theft requires us to extend our thinking beyond climate and seasonality, especially in agrarian societies. Thievery of crops in rural areas seems to be largely related to food insecurity, both the transitory type as well as the chronic variant.

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Table 1. Number of households in the different wealth groups according to their age

Age groups	Wealth groups			Total
	Poor	Medium	Rich	
<21	3	1	2	6
21-40	13	15	6	34
41-60	14	14	16	44
>60	6	5	5	16
TOTAL	36	35	29	100

Table 2. General information about annual crops grown by the interviewed households (hh:s) according to wealth groups and ethnicity

Wealth group	No of hh:s	% of households growing a certain crop					
		Maize	Sorghum	Wheat	Barley	Teff	Bean
Poor	36	94	39	72	42	11	3
Average	35	89	54	83	46	17	6
Rich	29	86	59	86	69	34	3

Table 3. Annual crops grown by the interviewed households according to age groups over the last couple of years

Age groups	No. of hhs	% of households growing a certain crop					
		Maize	Sorghum	Wheat	Barley	Teff	Beans
<21	6	83	67	83	33	0	0
21-40	34	81	69	75	38	25	0
41-60	44	91	29	79	44	15	3
>60	16	93	56	81	63	23	7