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Reasons for Food Insecurity of Farm Households in South Wollo, Ethiopia: Explanations at Grassroots

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REASONS FOR FOOD INSECURITY OF FARM HOUSEHOLDS IN SOUTH WOLLO, ETHIOPIA: EXPLANATIONS AT GRASSROOTS

1. INTRODUCTION

1.1 General background

Ethiopia has a population of about 70 million and occupies 1.11 million km² of land. Agriculture is the mainstay of Ethiopia's economy, employing about 85 % of the workforce. It contributes about 50 % of GDP. Agriculture is a source of food supply and raw materials, a supplier of foreign earnings and labor for industrial employment, a market for non-agricultural output, and a source of surplus capital for investment. Agricultural development plays a pivotal role in the structural transformation of a developing economy and is essential to induce the industrialization process (Mellor 1995). Agricultural development leads to higher labor and land productivity, and supplies a surplus over the needs for self-consumption to markets and agro-processing industries.

Subsistence, mixed smallholder agriculture is the dominant farming system in the highlands of Ethiopia, while agro-pastoral and pastoral systems play an important role in the lowland areas of Ethiopia. Both lowland and highland economic systems are the corner stones of the rural economy of Ethiopia. The development of both highland smallholder mixed farming and the lowland agro-pastoral/pastoral systems is paramount to the development of the economy of the country, contributing to food and livelihood security of the majority of the population of the country.

Livestock is an important sector in both highland mixed smallholder farming and low land agro-pastoral systems in Ethiopia. The contributions of livestock include food production, input for crop production and soil fertility management, raw material for industry, power-source, cash income, saving, fuel, social functions and employment. The contribution of livestock to total GDP and agricultural GDP of Ethiopia ranges from 12-16 % and from 30-35 %, respectively (MEDaC, 1998). The livestock sector contributes about 8 % of the total export earnings, and is the fourth major source of foreign currency through export of live animals, hides and skins (ibid).

1.2. Food insecurity profile in Ethiopia

Both smallholder highland mixed farming and lowland agro-pastoral/pastoral systems are not efficient and productive enough to ensure farm households food security through on-farm production (availability) and/or purchasing capability (access). Chronic and transitory food insecurity is severe particularly in the lowland areas. In fact, poverty, food insecurity and land/natural resource degradation are crucial and persistent interlinked problems facing Ethiopia and other Sub-Saharan African countries now and in-near future. Food insecurity is a chronic problem for about five million population of Ethiopia. The most recent food crisis is that which occurred in 2002/03, from which the country is not yet out. About 22 % of

Ethiopians were in need of food aid in 2003. The other periods of critical food crisis include 1984/85, 1991/92, 1993/94, and 1999/2000 (see Appendix 1). On average about ten percent of the population of the country faces annually food shortage. Food aid has been a major source for filling the food gap that saved thousands of lives. Although there are a complex and interdependent natural, socioeconomic, policy and political factors responsible for food insecurity, drought, low agricultural productivity and poverty are commonly referred to as significant direct factors that induce food insecurity. But, there are often policy and institutional constraints underpinning each of the responsible factors.

Food production in Ethiopia in the last three decades has never been sufficient to enable the rural population to be food secure. It was estimated that domestic food production provided in the late 1980s was about 1,620 calories per person per day, while total availability, including imports, was about 1770 calories per person per day, which is 16 % below the minimal level (2100 calories per person per day, equivalent to 225 kg of grain per person per year) (FDRE, 1996). Cereals (the core of Ethiopian diet) production in Ethiopia has been steadily declining on per capita basis over more than 45 years (1951-1992), while population continues to grow at high rate with out commensurate growth rate in food (cereal) crop production. The production of cereals dropped from about 200 Kg per capita in the early 1950s to less than 150 Kg in 1992 (FDRE, 1996).

Food insecurity affects particularly people in moisture deficit highland and in the lowland pastoral areas. Even in years of adequate rainfall and good harvest, the people, particularly in low land agro-pastoral areas, remain in need of food assistance. This clearly reflects the deeply entrenched poverty and food insecurity situation in the country irrespective of adequate rainfall. Although drought plays a paramount role in triggering food crisis, the difference in household consumption status between good year and bad year is not so significant to claim that drought is the central cause of famine/food insecurity. This implies the existence of structural and other factors underlying the food insecurity/poverty problem. In this regard, one can claim that inadequate technological progress and institutional changes are the underlying causal factors of food insecurity and poverty.

To sense the nature of this argument, we can compare the consumption status of rural and urban households in Ethiopia in good year (1995/96) and in bad year (1999/2000). The year 1995/96 was a good year in terms of rainfall amount and distribution with production of a record level, while year 1999/00 was characterized by unfavorable weather situation, climax time of the Ethio-Eritrea conflict and the collapsing price of Ethiopian coffee in the international market. Under the stated situation, the rural poverty incidence in 1999/2000 was 45 %, much higher than that (37 %) in urban areas. Between 1995/96 and 1999/2000 per capita calorie intake apparently increased in rural areas and declined in urban areas (see Appendix 2). This could be related with the practice that rural people spend (use their own produce) more on food than on non-food items. In general, a considerable proportion of total consumption is accounted for by own production (FDRE and MOFED, 2002). It has been registered that the food share in rural areas has increased from 60 % in 1995/96 to 67 % in 1999/00, while the food share in urban areas declined from 56 % to 53 % during the same period. This could imply that rural people were food insecure, for they react by spending much of their resource for food consumption. With regard to food poverty, the proportion of population below food poverty line in rural areas was about 41 % in 1999/00, where as it was 47 % in 1995/96, showing a decline in head count. The result for urban areas showed a

reverse situation, where the proportion of population under poverty increased from 32 % in 1995/96 to 47 % in 1999/00. At national level, proportion of population under food poverty declined from 45 % in 1995/96 to 42 % in 1999/00. Apart from weather situation, other factors (e.g. income, asset and market changes) could be involved for the resultant food situation at 1999/2000. As indicated in the document (FDRE and MOFED, 2002), however, the changes in mean consumption per capita in both rural and urban areas between 1995/96 and 1999/00 were not statistically significant. These scenarios described reflect the complexity of food insecurity, and that multiple factors are likely to be involved for the persistence or reduction of food insecurity.

Given the situation, one can easily find food secure and food insecure farm households residing as neighbors. These two groups - food secure and insecure – could share common climatic and weather situation and largely similar soil types and land topography. They also share common socio-culture. Yet, one faces food crisis and becomes dependent on food aid, while the other remains food secure, requiring no food aid. The central questions thus become: what are the factorial differences that make one food secure, and the other food insecure? Why and how the factorial differences arise?

In connection with this general problem in developing countries, de Janvry et al. (1998: 3) argue that determinants of social (e.g. poverty) and environmental degradation problems can be traced to the structural features of rural areas (distance, dispersion, resource based activities, incomplete property rights, etc.), the pervasiveness of market failures for a significant share of households, serious gaps in appropriate agrarian institutions in support of productivity and welfare, gaps in the inter-sectoral reallocation of resources, lack of coordination to escape regional low level equilibrium traps, pro-urban policy biases and lack of bargaining power for the rural poor. They further argue that while economic growth is a necessary precondition for the elimination of poverty, it is not sufficient for large proportion of rural households. These arguments further call for investigation in the nature of growth and the differential ability of rural households to participate and benefit from the growth process. The question is how these structural features become less supportive in enhancing growth factors that make a difference for the mass of food insecure households.

The objective of this paper is to explore factors underlying the variation in food security status among farm households in selected communities in BASIS-Ethiopia study areas. The paper is organized as follows. The following section introduces the BASIS-Ethiopia household study in terms of data collection and characteristics of the study areas. The third section describes the socioeconomic contexts and the food security status of rural households in the BASIS-Ethiopia study *woreda* (districts). The fourth section presents the discussion of the explanations of food security/insecurity by the key informants, while the final section presents concluding remarks.

2. THE BASIS-ETHIOPIA HOUSEHOLD STUDY PROJECT

2.1 Objectives and data collection

The Broadening Access and Strengthening Input Market Systems (BASIS) project in Ethiopia, with the overall objectives of food security and sustainable economic development,

conducted a panel of household surveys since June 2000 in four study woredas in South Wollo and Oromia zones of Amhara region.

Through the surveys were collected data on different aspects of household livelihood, including household demography, food stock and food consumption, assets, land tenure and transaction, farm production, off-farm activities, and institutions and institutional services. The times of each survey and the period covered by each of the seven rounds of surveys are shown in Table 1 below.

Table 1: Times of household surveys and periods covered by the surveys, BASIS-Ethiopia project

Year	Survey round	Time of survey	Period covered by the survey
Year 1: Mid-June 2000 to Mid June 2001	One	May/June 2000 (1992, Eth. cal)	The survey focused on inventorying the status at Mid-June 2000. The first half of year 2000 was a period of low food status period
	Two	Nov./Dec. 2000 (1993, Eth. cal)	The data is for the period between Mid-June 2000 and Mid December 2000. <i>Belg</i> (minor production season) production failed.
	Three	June 2001 (1993 Eth. cal)	The data is for the period between Mid- December 2000 and Mid-June 2001. A poor food status period
Year 2: Mid-June 2001 to Mid-June 2002	Four	October 2001 (1994, Eth. cal.)	The Data is for the period between Mid-June 2001 and Mid October 2001. Better <i>belg</i> production
	Five	March, 2002 (1994 Eth. cal.)	The data is for the period between Mid-October 2001 and Mid-March 2002. A better period of food status
	Six	June, 2002 (1994 Eth. cal.)	The data is for the period between Mid-March 2002 and Mid-June 2002. The data is a n inventory type with less detail. A period of declining food status
Year 3: Mid-June 2002 to Mid-July 2003	Seven	July 2003 (1995 Eth. Cal)	The data is for the period between Mid-June 2002 and Mid-July 2003. The data is an inventory type with less detail. Year 2003 was a period of food crisis at a country level.

2.2 The study areas and sampling

In each *woreda* (district) two Farmer *Kebelle* Administrations (FKAs) were selected purposively on the basis that one of them is nearer (5-9 Km.) to *woreda* capital town and the other relatively far (15-30 Km.) from it. The selection of the FKAs was done in consultation with the *woreda* officials and extension workers of the office of Agriculture. From each FKA was then 56 households were selected randomly expecting a total attrition rate of about 28 % by the final (sixth) round survey that would assure us a minimum of 40 households to participate in all rounds of the household surveys. The farm households were selected from

the sampling frame constructed from the list of FKA-registered farm households and the list of farm households who were not formally registered with the FKAs, but engaged in farming using land plots they obtain through different mechanisms like gifting, sharecropping or renting. The latter list was constructed on the basis of information provided by FKA leaders and other local informants. The sample size that went through first to sixth rounds of surveys was 420.

Table 2 shows the characteristics of the study *woreda* in terms of proximity to *woreda* (capital) town, traditional agro-ecological zones, altitude and production seasons. As a result of recent changes in rainfall pattern, some of the farmers in belg growing areas are attempting to grow during *meher* season. For example, farmers in Temu *kebelle* of Legambo *woreda* have now started growing crops during *meher* season. In the past the area was known as a typical *belg* area.

Chachato and Kamme *kebelle* in Bati, as indicated in the table, are low altitude areas, Chachato being lower with higher temperature and far from *woreda* town, Bati. Production in Bati *woreda* as a whole takes place only during *meher* season (June-September rainy season). Tebasit *kebelle* in Dessie-zuria *woreda* is a *dega* zone with *belg* production season (February/March-April/May rainy period). It is on a higher altitude compared to the other study *kebelle*, Gerado, in the *woreda*. Farmers in Gerado *kebelle* grow both in *meher* and *belg* seasons. Jamma *woreda* is a typical *dega* and *meher* growing area. Most of the area in Jamma is plain and has vertic soils. Except a frost problem, the area is known to have good agricultural potential. Tullumojo, a study *kebelle* in Jamma *woreda*, is found on higher altitude compared to the other study *kebelle*, Yedo, which is nearer to *woreda* town compared to Tullumojo.

Table 2: Agro-ecological zones, altitude, and production seasons of the study *kebelle/woreda*

Woreda (district)	Kebelle (FKA)	Proximity to <i>woreda</i> town	Agro-ecological zone	Mean altitude, m.a.s.l	Production Season
Legambo	Temu	Far	Wurch/dega	3481	Belg
	TachAkesta	Near	Dega	3149	Meher/Belg
Dessie-zuria	Tebasit	Far	Dega	3182	Belg
	Gerado	Near	Woinadega	2333	Meher/Belg
Bati	Chachato	Far	Kola	1386	Meher
	Kamme	Near	Kola	1757	Meher
Jamma	Tullumojo	Far	Dega	2679	Meher
	Yedo	Near	Dega	2613	Meher

Note: The altitude of each *kebelle* or site is determined by taking the average altitude of the location of each sample household, using a GPS instrument. Near = 5 - 9 Km; far = 15 - 30 Km.

3. DEMOGRAPHIC AND SOCIOECONOMIC CHARACTERISTICS, AND FOOD SECURITY STATUS OF FARM HOUSEHOLDS IN BASIS-ETHIOPIA STUDY WOREDA

3.1 Demographic and socioeconomic characteristics

The average family size in Bati (6.12) is higher than that (5.21) in Jamma. The family size in Legambo is the least (Table 1). This would have effect on labor resource as well as on consumption. The number of female-headed households in Jamma seems considerably high compared to that in Bati. Households heads in all the BASIS/IDR study *woreda* seem relatively young. The non-literacy level is the least in Dessie-zuria *woreda*, a *woreda* that surrounds the capital town (Dessie) of South Wollo zone. Non-literacy in Bati (89.09 %) is higher than that (73.83 %) in Jamma. Bati community is dominantly of Oromo ethnic group, and subscribe to Muslim religion, while the Jamma community is dominantly of Amhara ethnic group, with 54.21% of Orthodox Christians, and the remaining Muslims. The sample households in Dessie-zuria and Legambo are all of Amhara ethnic group, subscribing mainly to Muslim religion, 99.01 % and 91.43 %, respectively.

Table 3: Demographic and socioeconomic characteristics of households in BASIS-Ethiopia study *woreda*

Attribute	Bati	Jamma	Dessie-zuria	Legambo
Household size	6.12 (2.32) N=110	5.21 (2.55) N=107	5.10 (2.00) N=102	4.91 (2.05) N=106
Gender of HH head:				
Male-headed HH	94 (85.5)	74 (69.2)	82 (80.4)	78 (73.6)
Female-headed HH	16 (14.5)	33 (30.8)	20 (19.6)	28 (26.4)
Age of household Head				
Male head	46 (14)	48 (17)	48 (16)	46 (15)
Female head	47 (12)	42 (19)	50 (16)	49 (12)
Both	46 (13)	46 (18)	48 (16)	46 (14)
Literacy status head:				
Non-literate	98 (89.09)	79 (73.83)	72 (70.59)	79 (75.96)
Literate	12 (10.91)	28 (26.17)	30 (29.41)	25 (24.04)
Religion				
Christianity (Orthodox)	0	58 (54.21)	1 (0.99)	9 (8.57)
Muslim	110 (100)	49 (45.79)	100 (99.01)	97 (91.43)
Ethnicity				
Amhara	0 (0.00)	107 (100)	101 (100.0)	106 (100)
Oromo	109 (99.09)	0 (0.00)	0	0 (0.00)
Afar	1 (0.91)	0 (0.00)	0	0 (0.00)

Note: Figures in parentheses are percents for discrete variables and standard deviation for continuous variables

Source: Negatu, 2003

3.2 Major asset endowments

The crucial assets for farming households are the productive ones such as land, labor, and traction-power (animal power). Financial capital/credit, technological/human capital, and institutional/social capital are also essential assets that affect farm economic performance. We have seen in Table 3 that Bati communities have better family labor endowment in terms of family size compared to that in Jamma. Of course, larger family size increases at the same time the number of consuming units. Table 4 shows land, livestock and traction power (oxen) endowments of farming households in all study woredas. In land size and livestock size Bati is better endowed, while on average a farm household in Jamma holds a higher number of oxen. Legambo is least in farmland and livestock endowments.

Agricultural technology, as important source of productivity growth, makes a difference in food security status of farm households. More of Jamma farming households use the common and available technologies – improved seeds and chemical fertilizer. In the 2000/2001 cropping year, the proportion of farmers who used improved seeds and chemical fertilizers in Jamma was significantly higher than the proportions in Bati and in the other study *woreda*. Dessie-zuria followed Jamma in the proportion of farm households who used fertilizers. Unlike Bati, Jamma has a good agricultural potential and more or less stable rainfall pattern, inducing a considerable number of farmers to adopt improved technologies. In 2000/2001 cropping year, for instance, while 22.43 % and 68.22 % of farm households in Jamma used improved seeds and chemical fertilizer, respectively, only 4.54 % and 1.81 % of farm households in Bati used improved seeds and chemical fertilizer, respectively. Dessie-zuria followed Jamma in the proportion of farm households who used improved seeds (Table 4).

Table 4: Household asset endowments and technology use in BASIS-Ethiopia study woredas, 2000/2001 cropping year

Asset	Bati	Jamma	Dessie-zuria	Legambo
Land owned, ha	1.09 (0.490) N=107	0.98 (0.426) N=100	1.05 (0.581) N=98	0.84 (0.325) N=103
Livestock, TLU	4.03 (4.01) N=103	3.44 (3.876) N=94	2.31 (1.679) N=93	2.01 (1.680) N=85
Oxen, number.	1.51 (0.626) N=73	1.59 (0.848) N=56	1.33 (0.516) N=51	1.37 (0.489) N=33
Chemical fertilizer users, %	1.81 N=110	68.22 N=107	32.53 N=102	5.66 N=106
Improved seeds user, %	4.55 N=110	22.43 N=107	12.75 N=102	6.60 N=106

Source: BASIS-Ethiopia data

Note: N= number of observations. Figures in parentheses are standard deviations.

3.3 Food sources and food security status of farm households

The major food types used in all the study *woreda* are cereals, pulses and oil seeds. Animal products, fruits and vegetables are rarely consumed by farming households in these areas. The common ways of acquiring food in these *woreda* are own farm production (subsistence production) and purchase from markets. Other ways of acquiring food include gift, food aid and food loans. In the BASIS-Ethiopia study *woreda*, in the period between mid-December 2000 and mid-June 2001, own farm production contributed the highest proportion of the total household food availability, followed by purchased food (Negatu, 2003). Own farm production was found then to contribute 49.25 %, 86.37%, 45.9 % and 35.16 % of the total food availability in Bati, Jamma, Dessie-zuria and Legambo *woreda*, respectively. The contribution of purchased food to the total household food availability was found to be 29.37 %, 11.17%, 22.77%, and 39.68 % in Bati, Jamma, Dessie-zuria and Legambo *woreda*, respectively (ibid). This simply indicates that food access of farm households in Jamma *woreda* is highly dependent on own farm production where as it in the other *woreda* depends also considerably on food market. This may have links with better access of households in Bati and other *woreda* to cash and food market, and better access of farm households in Jamma to potentially productive farm lands in relatively suitable agro-ecology.

The food security status of farm households in Bati in the period between mid-December 2000 and mid-June 2001 was much better than that of farm households in Jamma. Taking consumption of less than 2100 calories of food per adult equivalent per day as indicator of food insecurity, it was found that 34.5 % and 93.5 % of sample farm households in Bati and Jamma *woreda*, respectively, were found to be food insecure in the period between mid-December 2000 and mid-June 2001 (Table 5).

Table 5: Food security status of farm households in the period between mid-December 2000 and mid-June-2001 in the BASIS-Ethiopia study *woreda*

Food Status	Bati	Jamma	Dessie-Zuria	Legambo	Group total
Food insecure, %	34.5 (38)	93.5 (100)	56.9 (58)	85.8 (91)	67.5 (287)
Food secure, %	65.5 (72)	6.5 (7)	43.1 (44)	14.2 (15)	32.5 (138)

Note: Figures in parentheses are counts. Food secure household is a household whose food consumption rate is 2100 calories or more per adult-equivalent per day

Source: Negatu, 2003

The Jamma farm households that are endowed relatively with better productive agricultural potential were thus found to be the most food insecure and vulnerable followed by farm households in Legambo. This situation needs further investigation, although frost problem is often held to be responsible for crop failure in Jamma. Now, we turn to possible explanations at the grassroots to the variability of household food security status among farm households.

4. EXPLANATION OF FOOD INSECURITY/SECURITY STATUS OF FARMING HOUSEHOLDS

We have seen that household holdings of farmland, livestock, animal traction power, and technology use were found to vary significantly between farm households of the study *woreda*. Agro-ecological difference between Jamma and Bati, for example, is significant, Jamma possessing relatively more conducive agro-ecology for agriculture. While Bati households have in general better access to big markets like Bati and Dessie towns, Jamma communities do not have. Members of many households in Batti seem to move to various places of work opportunities like Djibouti and Dubai (Arab Emirates), creating more remittance income opportunities for Bati households, compared to Jamma households.

A BASIS research report (Negatu, 2003) has noted a significant statistical association of some of these resource endowments with food security status in the study *woreda*. The bivariate statistical analysis showed that size of farmland operated, farm cash income and off-farm cash income of food secure farm households were significantly higher than that of food insecure farm households. Similarly, size of cultivated land, off-farm cash income, labor units, oxen number, use of chemical fertilizer and livestock size of farm households of higher food production quartiles are consistently higher than that of lower production quartiles. The results reflect on the direct and indirect relations of the factors identified with household food security status. We now turn to explanations of food (in)security, as indicated by food secure and food insecure farm households and by development agents (DAs) of agriculture in the selected *kebelle* in Bati and Jamma *woreda*.

4.1 Qualitative study approach

The qualitative study upon which this report is largely dependent was carried out in two *kebelle* - Kamme in Bati *woreda* and Yedo in Jamma *woreda* in January 2004. The two *kebelle* are located in *woreda* which are considerably contrasting in agro-ecological and socioeconomic characteristics. Cases of food secure and food insecure households were selected in both *kebelle*, as identified by *kebelle* leaders and extension workers in the *kebelle* jointly. The food secure households have been known to be food secure at least in the last two decades, while the food insecure are those who have been dependent on food aid almost permanently at least for the last 10-12 years. An in-depth interview and discussions were held with a food secure and a food insecure household in each *kebelle*. The researcher held also discussions with two development agents (DAs) working in each *kebelle*. The in-depth interviews and discussions were guided by a semi-structured checklist. The discussions and interviews were focused on reasons or factors for the households to become food secure or food insecure, as the case may be. Socio-demographic background, resource endowments, technologies, cultural/customary (values and norms) and formal institutions were points of discussion, as they make part of the explanation for the food (in)security status of rural households in general. The discussion with each household or DA took a period of about two hours.

4.2 Explanations of food security/insecurity at grassroots

4.2.1 The case of food secure household in Kame *kebelle*, Bati *woreda*

Resource endowments: Ato Mulisa, aged 73, is a non-literate farmer. His family size is ten. He holds a farmland of 2.5 hectares. His farmland has a gentle slope with light and sandy soil. He has two oxen with the necessary associated farm implements (*maresha* - traditional animal drawn iron-tipped wooden plow - and simple tools). He keeps four cows (for breeding) two female goats (for breeding), one camel (for draft) and some chicken. The she-goats and cows are sources of young off-springs for sales when ever cash is needed.

Cropping pattern and technology: Mulisa grows mainly sorghum, maize, field pea and Teff. Teff serves as a cash crop, and the rest are used mainly for home consumption. He does not grow vegetables and fruit trees. He applies organic fertilizer (manure) but no chemical fertilizers to his crop fields. Since chemical fertilizers burn crops in the absence of adequate rain, he has abandoned using chemical fertilizers since 6 years back.

Food, cash, and market access: Mulisa is self-reliant in food. He has never been given food aid or gift. Whenever he faces food shortage like in 2002/03 he sells animals. For instance he sold an ox in the 2002/03 drought; he sold also a camel during the 1984 drought/famine period. He is able to recover his big animals in 1-2 years through purchases using cash from sales of goats and bulls. His two daughters abroad (Djibouti) used to remit him some money before¹. The major cash sources of Mulisa are: animal sale, teff sale, remittance (past years). He visits almost weekly the weekly Bati market which is a one hour walk from his residence house.

Mulisa's and DAs' explanations of food security

Motivation, self-control and work discipline

Mulisa attributes his and others' better-off position in food security to disciplined, motivated and sustained efforts of individuals as a manager of household livelihood activities. He argues, based on his long life experience, that persons (like himself) would remain self-reliant as far as they remain industrious, disciplined worker, thrifty, non-extravagant, and thinker of the future. Also the DAs observe that food secure households are often hard working, far-sighted and industrious, while food insecure households do show less work discipline/commitment, less perseverance and less venturing.

Farm management, asset and diversification into non-staple cash enterprises

Another factor to which he attributed his betterness in food status is his efficient and timely operation of farm activities. He strictly follows and monitors all farm operations on time. He applies organic fertilizer, prepares the fields well, plant on time, weeds, cultivates, thins at the right time; he inspects and protects his fields daily. He inspects the timeliness and effectiveness of his family labor and hired workers in accomplishing the required farm operations. He stores harvested crops in well-prepared stores (pits). He also controls a thrifty

¹ At the time of the survey (January, 2004) the two daughters had already been forced to come home by the government of Djibouti

and planned utilization of grains in stores. The DAs have observed also that Mulisa is aware of, and applies, technical advices of local DAs.

Mulisa inherited his land and work ethics and knowledge of farm operations from his father who was also a thrifty, hard working and owner of better assets. The DAs in the *woreda/kebele* attribute the better food security status of Mulisa to the good initial asset he owned. His current livestock wealth is the best level under the context of the community, and it has served him as a source of cash and insurance against drought disaster and/or other shocks.

Effective institutions

It is gathered from the DAs that less qualified staff of local administration (*kebele* and *woreda* administration) are ineffective and inefficient in their works. *Woreda* offices do not usually implement effectively decisions and rules (e.g. land renting and sharing practices) passed from a higher authority level (zone or region). The DAs also argue that food aid has a debilitating effect on farmers' self-reliance, and that it promotes dependency attitude. They also say that food aid should gradually decline, letting farmers to persevere by their own for their livelihood.

There is also a consensus with the DAs that the extension service is not at its best level, for it suffers from shortage of DAs, incentives, supports and lack of close monitoring and assessment of the sufficiency and effectiveness of the extension service.

Farmers group work (cooperatives) are currently poor due to bad experience during the previous socialist regime (Derg). However, according to the observation of the DAs in Bati, farmer cooperative/group work need to be strengthened in order farmers cope up with problems of access to product and input markets which can not be handled individually due to limited number and low density of traders and input suppliers, and thin and fragmented markets.

The DAs and Mulisa emphasized the importance of land tenure issue in resolving food insecurity. According to Mulisa, farmers who can not feed their families should be allowed to sell their land plots to capable ones, instead of starving their families; retaining these farmers on farms may not help; on the other hand, their going to towns or other rural areas after selling their farm plots may not necessarily guarantee them success in employment or self-business. They may have, however, the opportunity to use their money in ways appropriate to them. It is the responsibility and business of each farmer to choose and decide (*gudayu naw!*), according to Mulisa conception. The underlying assumption of Mulisa's argument is that the government would prepare platforms of options for economic opportunities where people choose according to their choice and capacity to win their livelihood and prosper. In this regard, Mulisa seems to opt for multiple ways of accessing land

4.2.2 The case of food insecure/poor household in Kame kebele, Bati woreda

Background. Ato Mohammed, 55 and non-literate, heads a household of size of nine including five daughters and two sons. He inherited the land from his father, who was known to be an industrious and strong farmer with 3 ha. of land holding. But, Mohammed lost more than half of his father's land for redistribution for others by local EPRDF-government officials, because he had served as revolutionary community guard during the Derg regime,

the predecessor of the current EPRDF government. His children do not go to school except one who is financially supported by his niece.

Resource endowments: He holds now a farmland of one ha. He has no grazing land. His farm has been exhausted and is of poor soil fertility. His farm, however borders a flowing small river. He has no animals and no oxen. He had had oxen before ten years, since when he has not been able to recover them. So he has been leasing out the land for share cropping on half-harvest arrangement.

Cropping pattern and technology. He grows sorghum and field pea in the garden plots that remain from leasing out. He has never applied chemical fertilizer since long time, because of fertilizer burning damage to the crops in the absence of adequate rainfall or irrigation water.

Food and cash sources. Mohammed and his family members are engaged in various types of daily labor activities for cash and food: he works as manual laborer in construction and manual activities for better-off households; his wife prepares pepper for traders; wife and children sell firewood, and fetch water for better-off households. The household is a regular recipient of food aid. The household does not receive any remittance. He visits Bati market, one-hour walk from his residence, on average every fortnight.

Institution and risks: With regard to land rights, his opinion is that he is not pretty sure that land redistribution may not happen in future (tenure insecurity). He argues that landholders need to rent out for cash, instead of dieing of hunger. But he does not recommend land selling right, for he believes selling land is unacceptable value. More over, he argues that if a poor farmer sells his/her land he/she may get into irreversible destitution in the absence of jobs or other economic opportunities in rural or urban areas. The underlying assumption of Mohammed's argument is that the government/economy is not in a position to create platforms of options of economic opportunities for the poor, thus preferring to continuously hold land as the only remaining asset to hang on, even if small and less returning.

Mohammed asserts that ox is a crucial productive asset to get out of this trap. On the other hand, however, he does not want to take credit from the regional credit organization (ACSI) to buy an ox. This is because he does not want to be indebted and fears that the debt may pass to his children if he fails to repay. He fears the risk that the ox may die due to lack of adequate feeds or animal diseases for which there is no a guaranteed animal health service in the community. He fears that he may not be able to pay back since crop failure is frequent due to insects or rain failure. On the other hand, Mohammed does not use the flowing water even to grow *chat* (Khat), a stimulant cash crop, for the reason of difficulty of protecting the plot from the risk of illegal Chat harvesting by bypassing people since his farm is far from his residence. All these fears are there because of the absence of strong institutional setups that enforce property rights (e.g. *chat* field) and that which provides services that ensure farmers against animal diseases and crop failure due to natural disasters and uncertainties.

4.2.3 The case of food insecure household in Yedo kebele, Jamma woreda

Household demography and resources: Ato Abol, 44 and non-literate, has a family of 7 members including himself. He got his farmland during the land redistribution done in the Amhara region in 1996/97, though he had been farming a plot granted by his father.

He holds a farmland of one ha. of vertisol and light soil, and a grazing land of 0.25 ha. He has no oxen. He sold his two oxen in the previous year to cope up with food crisis and for health

care. He herds five goats in share-herding arrangement, in which he would receive half of new-born kids. He has one donkey.

Cropping pattern and technology: He grows wheat teff, grasspea, faba bean, and sometimes lentil, but no vegetables. He has some eucalyptus trees in his homesteads. He gets oxen traction service in different ways: he gets a traction service of a pair of oxen for a day, in return to two days of labor work on the fields of the owner of the oxen; gets a pair of oxen in return for a certain amount of straw, based on agreement; work with his wife on weeding and other manual works, for which he gets a service of a pair of oxen, based on specific terms of agreement. He applies fertilizer and improved seeds of wheat at very low level. He visits the weekly town market (one hour walk) weekly.

Food and cash sources: Own production, food aid, food loans from friends and relatives, and food purchases are the major sources of food. Cash sources include petty trading, day-labor employment in manual work like weeding, hay harvesting, etc. His wife brews and sells local alcohol-less beer (*karibo*).

Awol's explanations

Technological and institutional constraints

The weather in general is not predictable, especially the rainfall often delays or stops early. Pests are also unpredictable and difficult to control. He is unable or cannot afford to apply sufficient fertilizer. Lack of off-farm employment, limited opportunities and poor assistance in cash cropping and livestock activities aggravate food insecurity of poor farm households.

The existing land tenure right need to be improved in such a way that farmers would have a full-fledged right to rent out their lands for the length of periods they prefer. Awol's perception with regard to land sale is similar with that of the case of food insecure household in Bati: selling land may not be useful for poor farmers who may get bankrupted easily; selling right (private ownership) may tempt many poor farmers to sell their land without having better options for themselves and their children.

4.2.4 A case of food secure household in Yedo kebele, Jamma woreda

Background and resources: Ato Suliman, 45 and non-literate, is the son of a popular strong farmer. His family size is ten. He learned all farming skills and work discipline from his father. He had only one mule and an ox in 1985. He supplemented his farming with grain trade and selling at Dessie town market, 120 km away. He used to sell cooking gas (kerosene) buying on his return back to his village from Dessie. Later he started trading donkeys. He is now a rich farmer in the *kebele*.

He own one ha. of a farmland and about 0.25 ha. of a grazing land. He rents-in farm parcels every year investing 3000 Birr, including payment for fertilizer; he also sharecrop-in land plots from poor farmers and female headed households. On average he leases-in two hectares of land from other farmers every year. He has large number of animals: 4 oxen, two cows, 20 sheep and goats, one mule, one she-donkey and two draft donkeys. He has 800 eucalyptus trees.

Cropping pattern and technology: He grows wheat, teff, faba bean fenugreek and grasspea. He applies sufficient fertilizer and use improved seeds of wheat. As indicated by the

development agent in Yedo *kebele*, he applies fertilizer also for fenugreek (a cash crop), a practice not common with other farmers.

Food and cash sources: All food is from own production. He gets cash from sales of cash crops (wheat, teff and fenugreek) sheep and bulls, trees, and from trading (donkey trading). He receives no remittance.

Suliman's explanation of food security

Motivation and work discipline, farm management, and livelihood diversification

Like the case of food secure household in Bati, Suliman observes that food insecurity and poverty are caused by poor work discipline, lack of motivation and commitment in work, poor-self control and poor management of own livelihood activities. According to him, in order a household secure its livelihood, it has to: prepare and operate farm practices on time; control own hired and family labor strictly; monitor livestock husbandry in terms of feeding, health and watering, and; manage marketing by storing well and selling when prices rise.

He emphasized that farming is not sufficient for any farm household to escape from food shortage and poverty; it should be supplemented by various income generating activities like raising and trading livestock, and other non-farm activities.

Culture and institutions

It is also the observation of the DAs in Yedo that food insecure/poor farmers are less disciplined in work and less thrifty. There are traditional values that do not encourage innovations and innovativeness. For example, many people are involved in: celebrating many days in a month as non-working religious holidays; undermining and discriminating those who are engaged in traditional handicrafts (e.g. weavery, metal and pottery works); social discrimination of those who are employed (*kitregna*) by fellow better-off farmers. It is also the observation of the DAs that many poor farmers do not use sufficient fertilizer; and that some of them sell their fertilizers. On the other hand, the DAs observe, the better-off farmers apply extension advices; apply fertilizer sufficiently and are engaged in non-farm income generating activities.

Land tenure security: Suliman suggests that cash renting of land may be good for those who rent-out, but not for those who rent-in, for the weather situation and markets are not stable. He prefers, instead, buying and selling land so that the better-off farmers accumulate land and work, with a vision of the long term streams of benefits from use of new technology and careful and sustainable land management. He also argues that this would be also useful for the poor who are often dependent on the rich ones for employment and cash loans.

The DAs observe that farmers currently do not perceive that land tenure is secure. Farmers feel that their land can go to any body any time, for there is a high population of youths who are looking for land in their communities and in their families. The land certification idea that is now under pilot experiment in two *kebele* in the Amhara region is perceived as important step to legalize land property right. Farmers indicate, according to the DAs, that if they know that their land holding remains as their property legally and surely, they would be more motivated to exert all efforts to manage it well and get the maximum gain from it in any way possible. This is clearly a reflection of the existing perception of land tenure insecurity among farm holders. This insecurity perception of farmers could be minimized partially through

providing farm households a legal document that assures them that the regional and federal courts and governments shall defend their well defined rights.

From the discussion with the case farmers and DAs emerged four important areas of implications for assessment and intervention in order to improve the agriculture and livelihoods of the rural people: (i) create land tenure security for farmers; for instance, providing land titling certificates and legalization and implementation of policies, rules and regulations (institutions) would help to enhance farmers' tenure security; (ii) promote irrigation (iii) promote management and technological and scientific knowledge of farmers, and (iv) promote cultural changes in rural communities in order to minimize cultural constraints to productive and return-increasing activities and transactions.

5. CONCLUDING REMARKS

The discussion made in the section 4.1 transpires that 'the rich fights for more riches, while the poor fights more risks'. The following points and implications are drawn for attention in further studies and analysis.

The initial asset base of a household in terms of land size and livestock is an important factor that set the ground for take-off for food security. Improving land access (market) and credit supply may play an important role in alleviating the asset constraints.

Motivation and work discipline are important personal psychological behavior that may contribute to achieving food security goals. This may have links with nurturing role of families and values transferred by parents to children, requiring investigation by social and development psychologists.

Culturally embodied traditional values and attitudes to work, time management, capital accumulation and profit are relevant factors that affect livelihood activities and management.

Technological innovations in management of water (irrigation), pests, cropping pattern (crops types, commercialization/ specialization, diversification) and soil fertility management (fertilizers and soil conservation) and their accessibility by farm households are crucial in improving farm productivity and profitability, and hence household food security. In this regard, having clear agricultural technology and development (R&D) policy and institutions, and effective public research and extension organizations are crucial

Food secure farm households are engaged substantially in non-staple cash enterprises like livestock rearing, cash crops, and trading, implying that diversification, based on local resources and market opportunities, is an essential component of food security. The capital requirement for non-farm cash enterprises may need to be provided in the form of credit; technical knowledge and advice in order to promote non-farm activities. Farmers group work (cooperatives) could facilitate diversification out of staple crop production into non-conventional income activities. Institutional facilitation of formation of voluntary cooperative groups could be beneficial.

Risks of rainfall failure, pests, land tenure, property rights, product prices, and missing product, input and credit markets are crucial constraints that inhibit farm households from engaging in innovative and productive income activities. Technological and institutional interventions need to be envisaged to curb risks and mal-effects of risks.

In nutshell, cultural values and norms and the existing institutions need to be assessed and understood in designing any food insecurity/poverty reduction strategy and policy. In order to break the vicious poverty/food insecurity trap and induce rural and agricultural transformation, changes are required in: some social values/norms; incentives; market and credit services; research and extension services; cooperative/group works, and; the nature and operation of property (land) institutions (rules) and public agencies/organizations.

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APPENDIX 1: POPULATION AFFECTED BY DROUGHT/DISASTER

Year	Disaster/drought affected population (million)	Proportion affected (%)
1980/81	2.82	7.7
1981/82	3.70	9.8
1982/83	3.30	8.5
1983/84	4.21	10.5
1984/85	6.99	17.0
1985/86	6.14	14.5
1986/87	2.53	5.8
1987/88	4.16	9.3
1988/89	5.35	11.6
1989/90	3.21	6.8
1990/91	7.22	14.8
1991/92	7.85	15.6
1992/93	4.97	9.6
1993/94	6.70	12.6
1994/95	3.99	7.3
1995/96	2.78	4.9
1996/97	3.36	5.8
1997/98	4.10	6.8
1998/99	7.19	11.7
1999/00	10.56	16.6
2000/01	6.24	9.6
Average	5.37	10.3
2002/03*	14.3	22.0

Source: FDRE, 1996

*DPPC (Disaster Prevention and Preparedness Commission) official report

APPENDIX 2: TRENDS IN REAL CONSUMPTION EXPENDITURE (IN BIRR) AND CALORIE IN-TAKE (1995/96 CONSTANT PRICES)

Item	1995/96			1999/2000		
	Rural	Urban	National	Rural	Urban	National
Real food expenditure per capita	577	790	607	609	631	612
Real Non-food expenditure per capita	466	625	488	392	830	451
Real total expenditure per capita	1035	1411	1088	995	1453	1057
Kilocalories per day per adult	1938	2050	1954	2723	1861	2606
Share of food in total expenditure	0.60	0.56	0.60	0.67	0.53	0.65
Poverty head count index, %	47.0	33.3	45.5	45.0	37.0	44.2
Household size	5.1	4.7	5.0	4.9	4.6	4.9

Source: FDRE and MOFED, 2002

Note: 1 USD = 7.60 Birr