

## Insights to rural household food insecurity in Kenya

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### Abstract

In spite of relatively good harvest and good harvest -potential, rural households in agro semi-arid lands are often unable to meet their food requirements for the whole year. It is therefore not unusual to find households going without food, not too long after a good harvest. The situation of food insecurity in semi-arid lands is mostly transitory in nature. The main objective of this study was to identify and analyse the incidence and causes of seasonal food variations in arid and semi arid areas in Kenya. A stratified sample of 300 households based on agro-ecological zones, was drawn from Kitui, Makueni, and Mbeere districts. From the study, it is established that households in agro semi arid lands produce enough maize grain to cater for their needs through out the year. Households' incomes are low and basically come from sale of agricultural output. Household pressing non-food expenditures and destructive pests force farmers to sell maize grain driving them towards transitory food insecurity path. The government need to formulate and implement sound policies on farm inputs such as use of hybrid seeds and fertilizers to intensify land use; and marketing of farm output to guard farmers against exploitative marketing channels. Chemical standards enforcement agencies need to be strengthened to check sale of ineffective pesticides.

**Key Words:** Agro semi-arid lands, food insecurity, post-harvest losses

### Introduction

Food insecurity in Kenya has been an issue of concern. It has been attributed to declining productivity associated with the inherent difficulties of farming on fragile soils, the growing demand for more food, lack of more arable land, and a labyrinth of political, technical and structural constraints (Omosa, 1996). To counter this, strategies to enhance production including use of hybrid seeds, application of fertilizers and insecticides, irrigation farming and on-station research have adopted. Unfortunately, the country has proved incapable of matching food production to the growing population. Consequently, this situation has led to increased food imports and food aid. It is in the arid and semi-arid lands (ASALs), which form 80 percent of Kenyan land, where the problem of food insecurity is more acute (FAO 2000).

The ASALs receive between 250 and 800 mm annually. They are prone to cyclic episodes of drought, flood, famine, diseases and inadequate production activities. Although population density in ASALs is low (varying between 2 and 30 persons per Km<sup>2</sup>), population growth rates remain high, with an average rate of about 3.5 percent per annum. The rapid growth in ASALs population is derived both from natural growth as well as emigration from the densely populated high potential agro-ecological zones. Majority of ASALs inhabitants are small-scale subsistence farmers engaged in crop production and livestock keeping.

This study is undertaken to gain insights into household transitory food insecurity in the agro- semi arid lands of Kenya. Food security in these areas is related to households own crop production and ability to buy in case of food supplies shortfalls. Decreasing land sizes due to increasing population pressure in this area is systematically reducing the importance of livestock.

The study is motivated by the fact that despite many efforts by the government and other concerned parties to address food security issues in semi arid lands, getting a lasting solution has been elusive. There are concerns that if a lasting solution to transitory food insecurity is not found, repeated seasonal food insecurity would deplete the economic base of semi arid communities, exposing them to chronic food insecurity. Specific objectives of this study are to isolate the factors that are more critical in explaining transitory food insecurity and to Identify existing food insecurity coping mechanisms among the semi arid households.

It is envisaged that, food insecurity policy formulation and intervention must be guided by empirical findings. Results of the study provide useful information that will guide economic planners and policy makers in their effort to develop interventions programs and formulate policies that will ultimately lead agro semi arid households out of food insecurity.

## Methodology

The study sample was drawn from three semi arid districts of Kenya namely, Kitui, Makueni, and Mbeere. These districts represent more than 40 percent of Kenya's agro semi arid lands and present some mix of both ecological and cultural diversity. Literature search on causes of food insecurity and coping mechanisms preceded the formal survey. Reconnaissance visits and formal survey with use of questionnaires followed. A total of 300 structured questionnaires were administered. In each district, divisions with semi arid characteristics were purposively identified and based on population density; stratified random sampling was used to identify households for interview.

Data was collected on variables ranging from household demography, grain production and consumption, incomes and expenditures among others. Household's food security status was based on the household's ability to produce enough grain and ability to procure in case of shortage. The author deliberately embraces simple and easy to follow analytical tools ranging from frequency tables, descriptive statistics and cross tabulations.

## Results and discussion

### *Household Food Preferences and Production*

Agro semi arid households rely on grains for food and as well as incomes. The main grain produced is maize. Indeed all the households consume maize with 86 percent growing and 13 percent buying from the market. Households have switched from large-scale production and consumption of crops like millet and sorghum that are likely to do well in ASALs and those which could serve as additional source of income. This revolution is attributed by 86 percent of respondents to changes in lifestyles. The traditional dishes resulting from these crops are regarded as inferior and stereotyped as sign of abject poverty, especially by the young generation. It is also claimed that the preparation of these dishes is tedious and time consuming; and milk products (such as ghee and sour milk) that complement such dishes are nowadays not easy to find. Maize is easy to grow, is less vulnerable to disease than sorghum and millet, and requires less labour for bird scaring and threshing. Child labour for bird scaring is scarce given the high priority attached on education.

Food deficit in semi arid lands is associated with lack of maize in the household. About 83 percent of the respondents reported that when they run short of food stocks and the family goes without a meal, it is primarily on account of lack of money to purchase from the local market. Distances to markets are relatively short. About 66 percent of the households are less than five kilometres to the nearest shopping centres. It was reported that maize grains is always available in the nearest markets, but at varying prices as dictated by the forces of supply and demand.

Once in a while, households use wheat and rice as secondary foodstuffs (63 percent). These secondary foods are purchased from the local market centres using money obtained various sources. The main sources include proceeds from casual labour (38 percent), remittances (20 percent) and sell of produced grains (17 percent).

Precise knowledge of family daily and annual food requirements was thought a norm, as information on family food needs is assumed to confer a better food security planning benchmark for the household. Perhaps, if a household was well informed of its food requirements on daily and annual basis, chances of economizing on the use of their harvested stocks would be high and this could lead to sufficient stocks. Paradoxically, although 91 percent had knowledge of their daily food needs only 34 percent knew exactly their annual food requirements. Therefore chances of mismanaging the harvested grain cannot be ruled out.

Respondents were aided to estimate their annual maize grain consumption and production. The results are shown in Figure 1. On average, they produce 1,600kgs against an annual demand of 1,300kgs. The 20 percent poorest households produce on average 1,600kgs, which is far beyond their annual maize grain requirement of 1,100kgs. The 20 percent relatively richer households produce on average 2,000kgs against a requirement of 1,300kgs. It is only the third income quintile that has a deficit of about 200kgs. One important conclusion from this scenario is that households in agro semi arid land on average produce enough maize grain to cater for their annual grain requirements.

Production in agro semi arid lands is more or less a function of farm acreage. The average land holding per household in the study area is 7.5 acres. Around 73 percent of the households interviewed have less than four acres while 22 percent have between 5 and ten acres of cropland. Analysis of maize production and land sizes across land size quintiles is presented in Table 1. One issue stands out clear. The size of land a household cultivates determines maize production yields. Yield is a function of extensiveness of land use rather than intensiveness. This is perhaps due to limited use of hybrid varieties and fertilizers. So as land sizes continue to decline due population growth and emigration, household the food security through self-sufficiency is threatened.

Early planting is the norm in semi arid lands and the first rains are well timed. Given the unreliability of rainfall in semi arid areas, 75 percent of the respondents practiced dry planting (plant before the rains commence). Some of the reasons occasioning late planting include the need to confirm the true onset of rains and lack of planting equipment and inputs.

A variety of sources of seeds were identified. Majority of semi arid farmers (94 percent) use uncertified seeds. These include use of seeds from previous harvests (39 percent) and open markets and retail shops (47 percent). The implication of this is that only a small percentage is

assured of a good harvest in a relatively good season. The rest rely on chance and therefore risk very low yields. Some of the reasons prompting use of presumably unreliable seeds include high cost and non-availability of certified seeds in shops when required.

In 55 percent of the cases, women (heading households) make the decisions on what and when to plant. Only 12 percent represented cases where farming decisions were made by male household heads. This shows that women, who are the principal agriculturists in rural areas, do not necessarily have to wait for their husbands working elsewhere to make decisions on what and when to plant. They are empowered to make decisions regarding all farm enterprise. Perhaps, this could be attributed to the fact that the onset of the rains is critical in semi arid lands and thus any hesitation to plant early has a remarkable negative impact on crop yield.

### ***Household Incomes and Expenditure***

Household food security is also determined by ability to buy food from the market. Figure 2 illustrates the distribution in the annual household incomes. The distribution is asymmetrical and positively skewed. Several points stand out clear. Annual household maize grain requirement increases with income levels. Among the agro semi arid lands households' incomes are low on an average (Kshs 34,000). The 20 percent poorest households cannot solely meet their annual grain requirements with their incomes.

Almost two thirds of the respondents (58 percent) depend on sale of agricultural output as the most important source of income (75 percent divulged that they sell maize grain). About 18 percent relies on farm and non-farm casual labour while 9 percent on remittances. A small percentage relies on salary, charcoal burning, brewing illicit liquor, charcoal burning, basketry, retailing of manufactured products and firewood selling.

Respondents were asked the household assets they would consider to sell to meet specified family needs in various conditions (soon after the harvest and during food shortages). Immediately after the harvest, farmers are inclined to sell chicken (49 percent) and maize grains (38 percent) to obtain household supplies such as groceries. About 34 percent would be willing to sell maize grains while 14 percent are inclined to sell cows to settle huge financial obligations such as school fees or medical bills. During famine, 61 percent are willing to sell chicken to procure household supplies. To settle large financial commitments, 34 percent of the respondents would opt to sell goats while 23 would sell cows. What we gather from these responses is that households are predisposed to sell grain to obtain household supplies and to settle huge bills immediately after harvest.

**Table1: Land Productivity**

Land Size Quintiles	Mean (Kgs)	N
1	686.89	64
2	1,020.85	52
3	1,995.44	63
4	1,964.59	54
5	2,486.90	61
Total	1,634.51	294

Why are poor households being tempted to sell maize grain when they actually produce just enough to meet their annual requirements? To explain this scenario, we look at the households' expenditure patterns. Table 2 shows the total household income compared to expenditure across income quintiles. Household expenditure on non-food items, and especially on education and healthcare increases through income quintiles. To meet these pressing non-food expenditures (given limited income sources) majority (over 50 percent) of the respondents sell maize grain and sometimes at uncompetitive prices because of exploitative market channels (local cereal dealers).

About 25 percent sell maize grain to avert destruction by large grain borer during storage. While under storage, 73 percent admitted that they face a great risk of losing their maize grain grains. This is as a result of destruction by the large grain borer and rodents. This situation is attributed to use of inappropriate pesticides (62 percent) or use of traditional methods (14 percent) such as ashes, herbs, pepper, and smoking. Thus, many farmers are compelled to dispose off their grains very cheaply (sometimes as low as US\$0.03 per kg.) immediately after harvest. Unscrupulous chemical stockists take advantage of situation and sell adulterated pesticides. The situation is associated with inefficient chemicals quality control agencies.

From the foregoing discussion, it can thus be safely concluded that given other pressing non-food financial needs and need to avert grain loss by the agro semi arid lands households, sale of farm output exposes households to food security.

### ***Transitory food insecurity coping strategies***

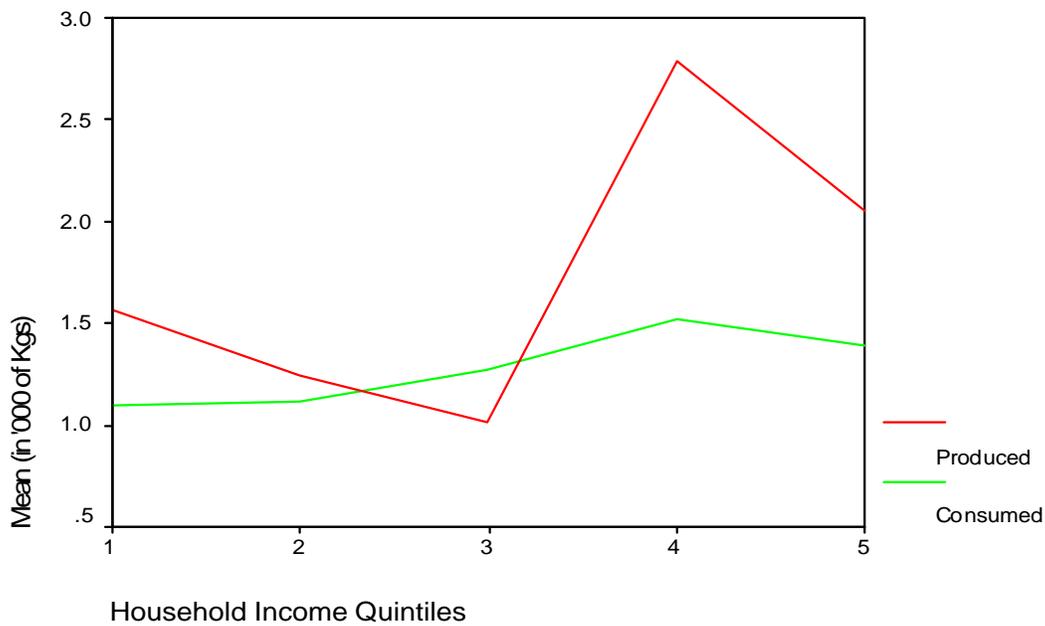
A drop in crop production and grain stocks are likely to subject a poor household to severe stress because of strong production-income-consumption links. A production shortfall can lead to a reduced food intake especially if compensatory income adjustments fail to take place. Difference in endowments such as skills, employment, resource access, asset accumulation and access to steady transfers, contribute to variation in response choices and coping mechanisms (Von Braun 1998). Households with few income sources and assets are particularly vulnerable.

In agro semi arid lands, when food shortage strikes, most households resort to buying foodstuffs from local shops, grain stores and vendors. This is only possible if the affected households can afford it. Respondents were asked to rank

**Table 2: Estimated Annual Income and Non Food-Expenditure (KShs)**

Income Quintiles	Annual Income (Mean)	Annual Expenditure on Non-Food Items (Mean)	Education Expenditure (Mean)	Health Expenditure (Mean)
1	3,317.27	26,501.45	9,704.73	6,289.75
2	11,683.00	23,243.00	12,129.80	3,989.00
3	20,054.93	21,953.44	11,624.00	6,708.32
4	34,111.22	31,139.71	26,836.98	11,904.59
5	100,063.49	52,587.81	36,979.05	8,634.29
Total	34,320.10	30,913.02	18,922.94	7,212.41

**Figure 1: Production and Consumption**



**Figure 2: Household Income Distribution**

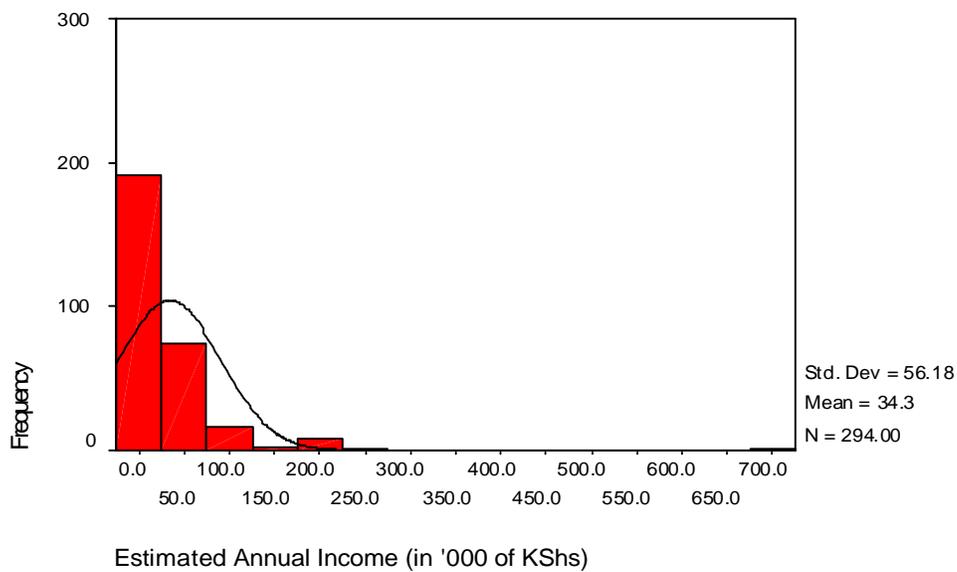
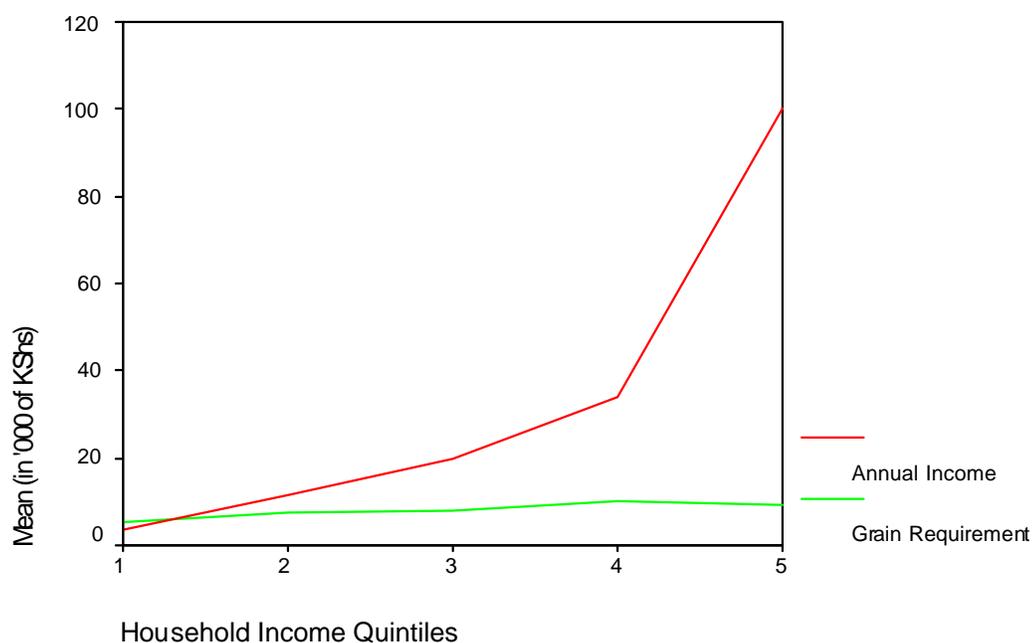


Figure 3: Income and Maize Grain Value



various sources of income during famine. Income sources range from proceeds from livestock sales (33 percent), non-farm casual labour (27 percent), remittances (15 percent), charcoal burning (7 percent) and selling and retailing manufactured products (5 percent). Other sources of income observed include borrowing from neighbours, bee keeping, basketry, firewood selling and illicit alcohol brewing and selling.

At the household level women are involved in selling the less valuable livestock such as chicken while men make decisions regarding the sale of more valuable possessions like cattle and goats. This denotes the existence of a male-female economy with men controlling the most valuable family assets. It is important to note that during this time livestock prices are too low.

Remittances come basically as transfers from relatives (a source the affected households have little control upon) and sometimes asking for dowry overdue. Farm casual work is very hard find compared to non-farm work particularly during famine. The rate per day for non-farm work is too low and range between US\$ 0.6 – 1.2.

Respondents claimed that although charcoal burning is illegal, it is an important source of income during famine. Retailing of manufactured products during famine not only provides extra income but also keeps some members of the household busy during that slack season.

How important are different coping strategies to households across income quintiles? Among the 20 percent poorest, 36 percent prefer to dispose off their livestock ranging from chicken to cows. About 27 percent opt to seek for casual labour while 18 percent seek assistance from

household relatives working outside. Among the 20 percent relatively richer households, 33 percent opt to dispose livestock while 23 percent rely on remittances. A few important points were noted. First, sale of livestock is equally important to the poor as well as the rich. Secondly, preferences for casual labour and charcoal burning declines as we move from lower to higher income quintiles.

## Conclusion

The main objective of this study was to get insights to transitory food shortages in agro semi arid lands in Kenya. From this study, it has been established that household food security in agro semi arid lands is closely linked to household own production. Food security is more of an availability issue rather than affordability because of low household incomes. Household on average produce enough maize grain to cater for their families needs through out the year. Crop yield in agro semi arid lands are a function of acreage. With growing population from within and as a result of emigration from high potentials areas, there is need to intensify land use.

Household incomes are too low and they basically come from sale of agricultural output given that the area is not well endowed with cash crops. Because of pressing non-food financial obligations such as school fees and medical services, and post harvest losses occasioned by the larger grain borer, households are forced to sell maize grain thus exposing their households to food insecurity.

Sale of livestock emerged as the major transitory food insecurity coping strategy. With declining animal stocks owing to increased land density, this option is threatened. Given the non-availability of casual labour during famine it is likely that household will be forced to pursue other emerging but illegal sources of income such as charcoal burning and illicit beer brewing and selling.

Based on the findings it is evident that most of the causes of food insecurity are reversible. It is therefore recommended that the government in collaboration with other stakeholders consider the following strategic options when designing a food security policy for agro semi-arid lands communities: revive technical support services to rural farmers in order to optimise agricultural production; subsidize the cost of social services especially education and healthcare to ease pressure on limited household resources; research on the control of destructive large grain stock borer that is prevalent in semi-arid lands; and strengthen chemicals standards institutions to guard against sale of ineffective insecticides. Besides, there is need for more efficient grain markets that can offer better returns to farmers.

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