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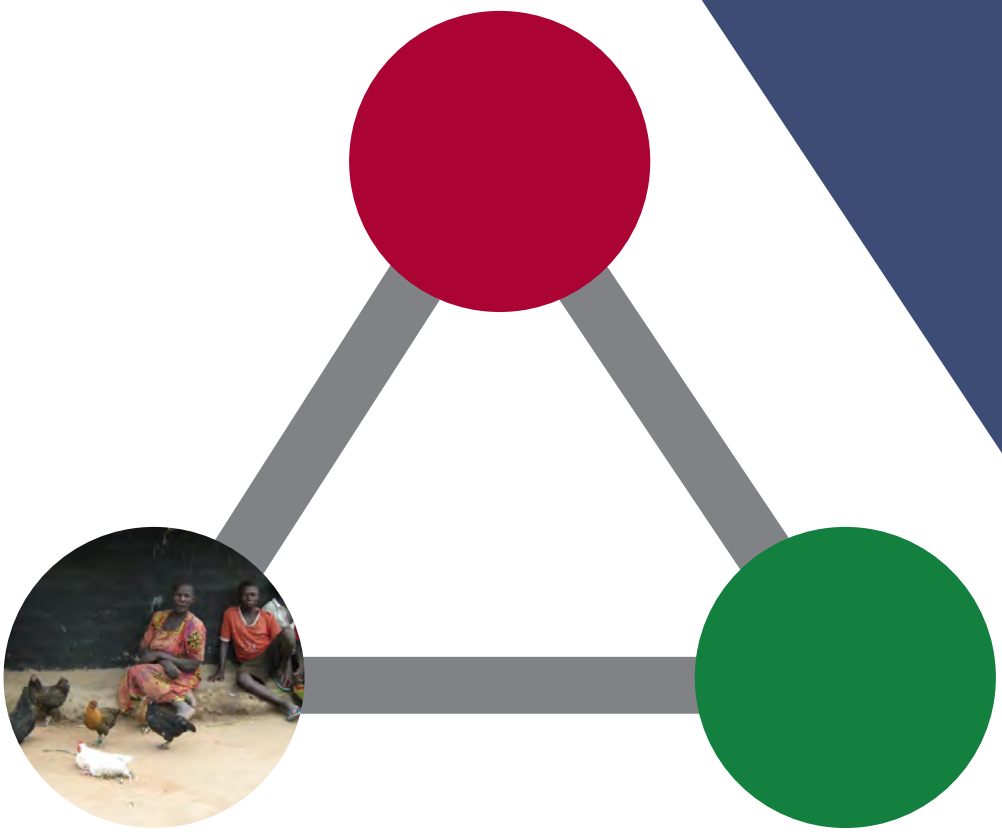

The role of poultry in peoples livelihoods in Uganda

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Executive Summary

The Highly Pathogenic Avian Influenza (HPAI) circulating virus affects the poultry sector worldwide. While HPAI can lead wiping out of the entire poultry at ago, rural families who partly depend on poultry farming for survival would find it a problem to survive in such a situation. Majority of the rural population take domestic birds, especially chicken as a 'bank' from where they easily convert physical capital to financial, cultural and social capital to cater for school fees, health care, and other domestic needs. Poultry in Africa, though an important component of livelihoods, has not featured seriously in the policy arena. The problem is worse where poultry farming depends on a free range and smallholder production systems, which increase the chance of exposure to domestic poultry's interaction with wild birds with a high likelihood of disease transmission. The problem also exists where an outbreak of a disease leads to undifferentiated culling that may end up decimating unique poultry genetic resources of local breeds. In addition, conditions of livelihood uncertainties may set in become worse for free-range poultry farming systems commonly practiced in many households in poor communities. The free-range system exposes domestic poultry interaction with not only wild birds but also infected birds from the neighbouring homes, which makes the likelihood of disease transmission possible and fast. The situation becomes worse, especially in urban areas where local authorities fail to cater for safe transportation means of poultry products from far off distances that increase the risk of spread of diseases.

In Uganda, poultry as a sub sector does not have the attention it deserves to date. For instance, the situation of lack of access to veterinary services increases livelihood uncertainty among the poor farming households since there are weak disease outbreak and control/management system. This study's main objective was to assess the role of poultry in rural livelihood, especially the impact of shocks such as disease outbreaks by profiling current rural poultry status in five districts of Arua, Jinja, Kanungu, Lira, and Tororo districts.

This study used a cross-sectional design to collect data from rural households and communities using survey and ethnographic study approaches. While the survey component was crucial in gaining a deeper understanding of the extent of poultry livelihoods, including diseases, variety, marketing chains, and poultry use the ethnographic study helped in making clear how rural poultry farmers deal with vulnerabilities and threats of diseases and perceptions about new and improved genetic breeds vis-à-vis local breeds. A total 527 households were visited and one respondent interviewed in each. In addition, 32 Focus Group Discussions (FGDs) conducted, including several key informant interviews.

The results indicate that poultry is a major component of rural livelihoods in Uganda where at least each homestead keep a domestic bird, especially chicken not only for sale but also for prestige and other cultural reasons. Majority of respondents interviewed argued that the major livelihood activities engaged at household levels are subsistence agriculture, small businesses, mining, and transportation activities, especially bicycles and motor cycles. In addition, rural communities prefer local breeds because they are resistant to diseases and adoptive to the environment than improved poultry breed. Such an attitude affects not only the scale and output of the poultry livelihoods but also planned interventions in the poultry sector.

In majority of the poor rural communities, a large proportion of poultry keepers are in the smallholder production systems. A large percentage of poultry farmers are women since men usually leave poultry farming to women and children because of the perception that poultry farming is a minor and not befitting men's' efforts.

This implies that women play a significant role in poultry keeping and as a result, poultry contribute directly to household food security and the wellbeing of children.

In all areas visited, there were no reports of the outbreak of HPAI except in Arua where respondents reported having heard about the outbreak in Sudan. Disease outbreak affects household livelihoods, making it hard for families to fulfil obligations, such as providing the necessary school requirements for their children. It is also clear from this that poultry at a household level is not considered as a business enterprise but rather is mostly taken as an obligation every household must engage in or have as an asset.

Household interview also show that majority respondents obtained food, household items and consumables, such as source pans, paraffin, etc from selling poultry. In some instances, respondents reported converting poultry into other large domestic animals, such as exchanging chicken for goats and later cattle.

In addition, most people take chicken, as a companion in the home and in case of death, there is likely to be a noticeable misery in a household. This perception may affect poultry farming because rural folks usually keep poultry for social reasons rather than entirely for commercial purposes. For instance, respondents described chicken as 'flowers' in the compound. Other cultural practices and traditions where poultry plays an important role are in marriage and burial ceremonies where the presence of chicken is a special requirement.

Majority of the respondents also had local knowledge regarding the perceived causes of diseases, such as Newcastle, Coccidiosis, Gumboro, and fowl typhoid disease. They also reported knowledge on home treatment, such as use of local herbs. Disease out breaks affects livelihoods as a community and at individual households because there is internal re-arrangement of the priority requirements at the household level. This leads to reduction in capital available to the farmer, leading to poverty. In addition, whenever the disease strikes, it does not only affect one home but rather the whole village, or the whole sub county, making it difficult to have 'a fall back' position with neighbours, relatives, and friends.

Based on findings from this study, we suggest some policy recommendations.

- First, we recommend policy interventions in the poultry sector in Uganda. In order to enhance the already important role poultry play in peoples livelihoods in Uganda, a pilot intervention based on a regional level basis will suffice. For example, since the northern districts in Uganda highly depend on poultry livelihoods and given the fact that there has been an ongoing armed conflict going on for over 20 years, a poultry livelihood project would be a welcome intervention.
- Second, there should be public information and education programs on poultry production. This would not only avoid a catastrophic impact of the outbreak of diseases but also go a long way to enhance their livelihoods through improved methods of farming, disease control, marketing, housing, and support services, such as veterinary outposts.
- Third, there is need for institutional reform and revamping through focus not only on formal institutional set ups, such as line ministries to fight disease outbreaks but should also use informal institutions, such as village community organizations to spread the message. Here, the important message is that it is easier to manage groups than scattered individual farmers. In addition, government should revamp formal institutions, especially veterinary services that handle vaccination, production, breeding, disease control, etc.
- Fourth, government should bring the poultry sector into the forefront of national poverty reduction strategy. For the sector to play its role effectively, it should be incorporate into the National Development Plan – NDP, as well as including it in the sector investment plan of MAAIF. Finally, there should be an increased investment in research and development through introduction of multi-disciplinary approach to research into the role of poultry in people's livelihoods. A review and revision of

university curriculum should include specialized training in poultry for both veterinary and agricultural scientists. This will enhance poultry sub sector visibility.

Introduction

Background to and motivation for the study

The highly pathogenic avian influenza (HPAI) virus is having a devastating effect on the poultry sector worldwide. The virus also has zoonotic potential, putting human health at great risk. A number of people worldwide have already lost their lives to it, and in Asia human deaths are continuing. In addition to its capacity to spread directly to humans, the virus can also severely affect people's livelihoods through its devastating impact on poultry. It also has the potential to wipe out unique genetic resources.

Thus, HPAI outbreak and its links to people's livelihoods in rural areas need to be thoroughly investigated and understood.

The HPAI virus has been circulating in the world for some time, especially in Southeast Asia, the Near East and West Africa. The structures of the poultry sector and farming systems in affected regions are very diverse, ranging from smallholder (including subsistence) farming to well-organized, large-scale commercial farms. Different farming systems provide different challenges and opportunities for the control of HPAI and other disease outbreaks. The situation is particularly problematic where smallholder and commercial poultry production systems exist close together. Undifferentiated culling during a disease outbreak may decimate unique genetic resources of local poultry breeds. Livelihood uncertainties may become worse for the free-range poultry farming systems commonly practised in households in poor communities. The free-range system exposes domestic poultry to interactions with wild birds and infected birds from neighbouring households, which makes disease transmission far more likely and more rapid. Under-developed transportation systems can also have severe transmission or zoonotic effects.

As in many other developing countries, poultry farming is a very important component of livelihoods in Uganda, especially in rural communities. In Uganda, however, poultry farming does not receive the attention it deserves and requires, probably because of a lack of understanding about the role that poultry plays in poor households. In many local societies, poultry activities, especially the rearing of chickens, ducks, turkeys and, recently, guinea fowls, have traditionally been part of rural households' coping strategies for emergencies that require the quick conversion of physical capital into social, financial and cultural capital.

The lack of attention to the poultry sector results in weak veterinary/extension services, and weak and outdated laws and policies. Weak veterinary services increase livelihood uncertainty among poor farming households and compound the risks of disease outbreaks, as disease control/management systems are lacking. This poses a major obstacle to the success of any centrally orchestrated disease campaigns or identification. Ugandan poultry farming is still in its infancy, especially in rural areas where traditions are still supreme, and there is need for greater understanding of the role poultry plays in people's livelihoods.

Disease control policies often pay insufficient attention to the people whose livelihoods are affected by disease outbreaks. This raises the question as to whether or not control and prevention strategies can work without the participation of those whose livelihoods depend on poultry. There is need to develop understanding about how smallholder producers and village communities are involved in the control and prevention of some of the devastating disease outbreaks that affect people's livelihoods. Key to any control and prevention scheme is an understanding of market access within prevailing poultry production systems, along with holding sizes, level of intensification, overall densities and geographical/ecological settings. This requires a full exploration of how excessive movement of poultry products can either

create problems for or enhance local livelihood patterns, through studying how poultry activities are carried out in different parts of the country: How does an outbreak of disease, such as HPAI, create a deficit in the supply and demand chain? How does this affect the livelihoods of poor rural households and communities? Are government efforts in place to cater for the uncertainties of poor rural households?

Global interventions to control and prevent HPAI aim to control outbreaks through short-, medium- and long-term measures. This global strategy emphasizes the need to strengthen veterinary infrastructure within countries, strengthen laboratory diagnostic resources, enhance surveillance for outbreaks of HPAI and other transboundary animal diseases, develop response capacity, and ensure resources for effective response. However, this focus on control and treatment outcomes emphasizes the biomedical model, but ignores how households and communities adjust to the loss of poultry in their livelihoods.

Objectives of the study

The major objective of this study was to examine how local poultry livelihoods are organized, procured and executed under the shock of HPAI. More specifically, it examines how farmers perceive poultry production as a component and asset that can be used in the development of appropriate and potentially sustainable livelihood strategies over time.

The study focuses on poultry's role in livelihoods, addressing how local rural farmers survive shocks to their livelihoods and the role that poultry plays in this. Farmers typically have a limited range of options from which to build survival strategies.

An overview of the approaches used

The study used mainly primary data collected in the five districts of Arua, Kanungu, Lira, Jinja and Tororo. Among the data collection approaches used were ethnographic ones, such as key informant interviews (KIIs) and focus group discussions (FGDs), and a household survey using a well-structured questionnaire. This approach was successful in that most key stakeholders were approached and key information was collected in a country where data on poultry activities, numbers and livelihood implications are lacking. The methods, rationale, sampling and analytical approaches for the study are discussed in greater detail in Chapter 3.

Country Profile, Poverty and Livelihoods in Uganda

Uganda's development context

The Ugandan economy has continued to register impressive growth rates by the standards of many developing countries. The revised gross domestic product (GDP) series estimates a real economic growth of 8.9 percent for the financial year 2007/2008. In 2006/2007, the GDP growth rate was 6.5 percent. These developments are largely the result of wide-ranging economic reforms in the country over the last decade. Throughout the 1990s, Uganda pursued policies aimed at liberalizing the economy and ensuring the effective application of market-based decisions in a bid to build a private sector-led economy. Agricultural inputs and product markets were liberalized in an attempt to improve the efficiency of service delivery.

A number of government parastatals were privatized to stimulate private sector participation in the economy and reduce government spending. These policies have had large impacts on the agriculture sector, as poor farmers have had to produce without inputs to enhance soil fertility and without access to the market.

Despite its impressive economic performance, Uganda faces several development challenges, which include high poverty rates, especially in rural areas, and an expected slow-down of economic growth and structural transformation resulting from external factors such as the global economic crisis and high commodity prices. In addition, a high population growth rate of 3.2 percent is reducing the productivity of subsistence agricultural, and investment in human development (health and education) is inadequate.

Over the last decade, the Poverty Eradication Action Plan (PEAP) has been the main policy document to providing a policy framework to guide development in Uganda. In response to the prevailing development challenges the PEAP aims to: (i) enable sustainable growth of incomes for the poor; (ii) increase the productivity and competitiveness of the economy; (iii) restore security, resolve conflicts and improve regional equity; (iv) strengthen governance; and (v) enhance human resource development.

The PEAP was to have ended by July 2008, but as no successor plan was in place, it was extended to July 2009. The government is in the process of developing a successor policy – the National Development Plan. This is being coordinated by the National Planning Authority, which has the mandate to plan for the country. In the agriculture sector, the Plan for the Modernization of Agriculture provides the overarching framework for enhancing agricultural productivity.

Poverty in Uganda

Poverty is a serious problem, and is more predominant in rural areas, even after adjusting for cost-of-living differentials. The proportion of the population living in poverty almost halved from 56 percent in 1992 to 31.1 percent in 2005/2006, with decreases in both rural and urban areas. All regions generally experienced declining poverty between 1992 and 2000, but the magnitude and extent of the fall varied greatly among regions. In general, the trends have been encouraging. The northern region accounts for the highest incidence of poverty, at 60.7 percent in 2005/2006, followed by the eastern region with 35.9 percent, and the central region, which has the lowest rate of 16.4 percent.

The agriculture sector in Uganda

Uganda's economy and resource base are driven mostly by subsistence agricultural production. About 85 percent of the total population of 24.7 million people[1] directly or indirectly derive their livelihoods from agriculture, with 86.2 percent of these people living in rural areas. Agriculture[2] provides a significant share of GDP, at almost 40 percent (Table 1), as well as 85 percent of export earnings, 80 percent of total employment, and the bulk of raw materials used by the mainly agriculture-based industrial sector[3]. Wage employment is not very relevant in rural areas except where the tea industry has been growing steadily over the last ten years. In Uganda, livestock production contributes about 17 percent of agricultural GDP, representing about 7.5 percent of total GDP (Byarugaba, 2007). Livestock numbers are likely to have increased[4].

[1] Media reports have been quoting a different figure based on population projections, but as these are not census figures, the official 2002 national census figures still stand.
[2] Agriculture incorporates the production of crops, fish and livestock. A farmer is any person who undertakes agricultural enterprise(s), whether these are of a commercial nature or just for survival purposes (State, 2005).
[3] Although the preliminary results of the 2002 Uganda National Household Survey show that only 56 percent of employed, economically active people work in the agriculture sector (Uganda National Household Survey, 2003), and the share is highest in the northern region
[4] There are not yet any accurate figures from the agricultural census carried out in December 2007 with support from the National Livestock Productivity Improvement Programme and funding from the African Development Bank (ADB). The previous agricultural census was carried out in 1991.

Figure 1 Poverty at the regional and national levels, 1992 to 2006

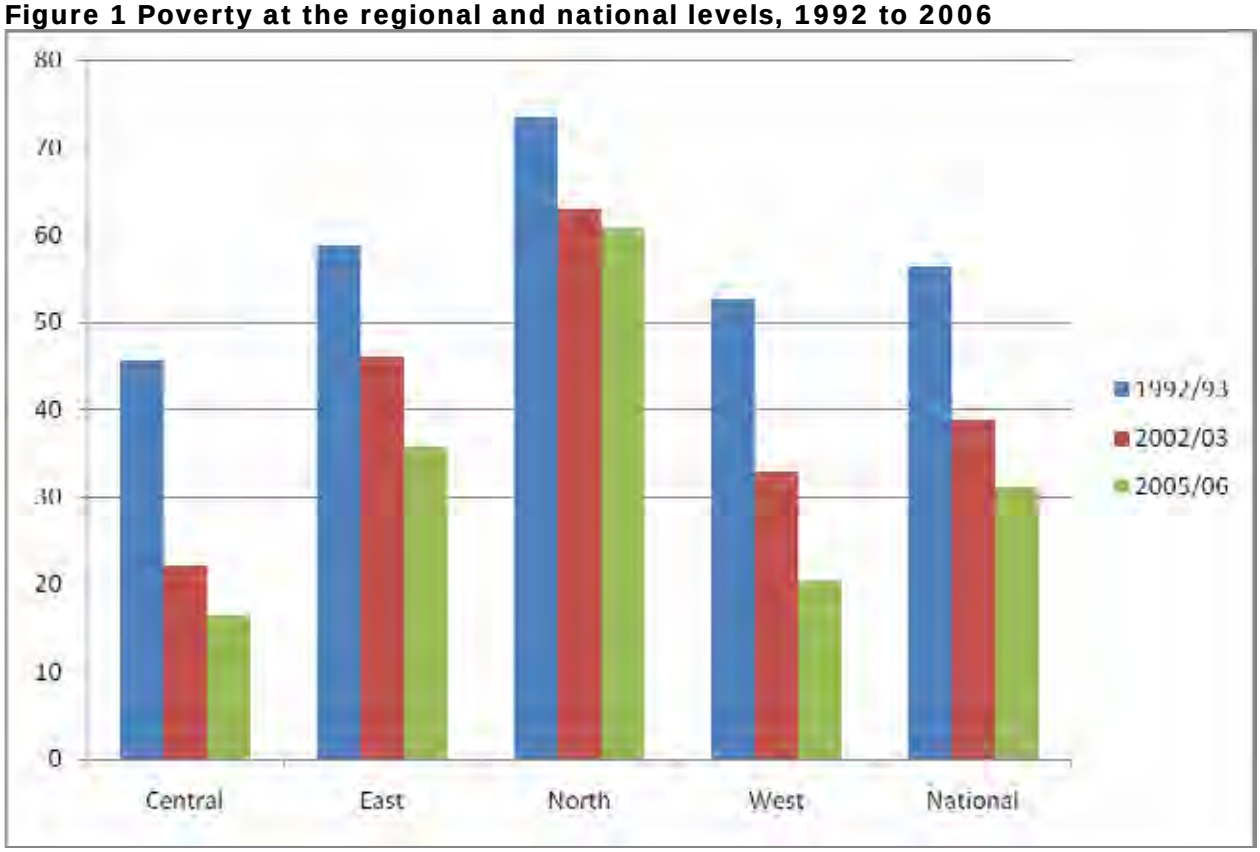


Table 1 The agriculture sector's share in the economy, 1988 to 2002

Year	Total GDP (billion U Sh)	Agricultural GDP[5] (billion U Sh)	Agriculture's share in the economy, %
1988	1 769	964	54
1989	1 881	1 019	54
1990	1 985	1 061	53
1991	2 088	1 086	52
1992	2 182	1 116	51
1993	2 320	1 170	50
1994	2 555	1 246	49
1995	2 768	1 291	47
1996	2 906	1 299	45
1997	6 594	2 727	41
1998	7 186	3 005	42
1999	7 666	3 184	42
2000	8 038	3 302	41
2001	8 528	3 461	41
2002	8 977	3 571	40

Source: Ministry of Finance, Planning, and Economic Development (MoFPED) Agricultural sector working group, PEAP revision paper for the agricultural sector, final draft, 2003, p.3.

The poultry sector in Uganda

A paper by Byarugaba (2007) provides a comprehensive analysis of the poultry sector, and the distribution of poultry throughout the country and by type of farming system. This analysis shows that free-range farming systems are common, especially in rural areas, but there is

[5] These figures do not take into account the contribution made to the economy by local industries involved in processing various agricultural commodities. Fish processing and export especially to the European Union market, for example, makes a significant contribution to GDP.

some close-range farming, mainly in urban areas where most exotic birds are reared. The central region had the most exotic types, because it is predominantly urban, and the eastern region has the most local breeds. Chickens dominate the production system as the main poultry type. Uganda's total poultry population was estimated at about 32.6 million birds for 2006/2007, up from 23.5 million in 2002. Of this, 80 percent is free-range indigenous breeds, while commercial types are mainly exotic (for a detailed analysis, see Byarugaba, 2007).

Poultry livelihoods in Uganda

The term livelihood has different implications and outcomes in different settings. In policy and action-oriented research, the United Kingdom's Department for International Development (DFID) uses the term livelihoods to describe people's means of day-to-day survival. In academic fora, use of the term is being debated, especially regarding livelihood viability and capabilities, claims and access to resources (Bebbington, 1999; Chambers and Conway, 1992; Leach, Mearns and Scoones, 1999), livelihood diversification (Ellis, 1998; 2000), and household coping strategies (Davis, 1996). Scholars such as Blaikie et al. (1994) examine use of the term livelihoods in disaster analysis, which seeks to explain poor people's livelihoods, including their coping mechanisms. However, few scholars have focused on changing livelihood patterns, with the exception of Francis (2000), who addresses the varied nature of livelihoods, including changing patterns in Eastern and Southern Africa, and State (2005), who looks at social capital networks in livelihood patterns and strategies in Uganda.

In Uganda, most people's livelihoods depend on agriculture (mainly subsistence farming). About 85 percent of Ugandans live in rural areas, primarily as smallholder agriculturists. Latest figures indicate that agriculture accounts for 50 percent of GDP, compared with industry's 15 percent and services' 39 percent. Uganda is still a primary commodity economy, "stuck in the Garden of Eden" (Kiiza 2006) as an agrarian economy based on smallholder farmers who depend on rain and soil fertility.

Poultry livelihoods are survival strategies that use the proceeds of keeping domesticated birds at the smallholder, homestead or family level to supplement subsistence survival. Notable among the very few studies on poultry livelihoods in Uganda are those by Byarugaba (2007) and Kyomugisha (2008). In most of Africa, livelihoods are less specialized and tend to combine both crop and animal farming, rather than one or the other. It is rare to find a homestead that does not own poultry, especially chickens. Recognizing the multiple natures of rural livelihoods helps build an understanding of the complexity of African livelihood patterns in general and poultry ones in particular. To ensure that poultry livelihoods are not taken out of context, it is crucial to have access to tangible and intangible resources, including money, skills, land, crop yields and harvests, livestock, and knowledge about opportunities and trading patterns (Francis, 2000:7). Byarugaba (2007) and Kyomugisha (2008) acknowledge the uniqueness of African rural livelihoods that combine crop and livestock farming.

Attaining multiple livelihoods is complex, and involves not only a complicated process of negotiations and multiple power relations at the personal, household and community levels, but also multiple social network connections. These negotiations often involve consultations with relatives, friends or neighbours. They are affected by people's perceptions and long-standing cultural practices and traditions, most or which favour male over female members of households.

In Uganda, many factors contribute to multiple and changing livelihoods. This report profiles current rural poultry livelihoods in the five districts of Arua, Jinja, Kanungu, Lira, and Tororo, where there are small variations in poultry livelihoods, but no major differences. All five districts have experienced changes that affect poultry livelihoods, including the emergence of new crops that were not part of livelihood strategies before the late 1990s, such as vanilla, upland rice, clonal coffee and aloe vera, and the introduction of new poultry breeds.

In some areas, the market has been liberalized since the neo-liberal policies of the early 1990s were implemented (State, 2005). The implications of these changes on poultry production are double-edged: on one hand they lead to the diversification of poultry breeds that are suited to commercial poultry farming; but on the other hand, they also lead to depletion of local breed variety and diversity due to crossbreeding. This results in the loss of local chicken varieties that are resistant to local conditions and also affects local cultural preference for particular chicken species.

Methodology and approach

For this study, the researchers adopted a multi-methodological approach, which ensured a minimum shortfall of each dataset collected using both ethnographic and survey data. The approach was adopted after wide consultation between the study implementation team and FAO, as the funding agency, but the research team alone carried out sampling in the field, including the selection of study sites and the sample. A minimum sample of 15 respondents per village was used for the survey data, with at least four (4) FGDs for each sub-county.

The approach

Study design

Cross-sectional data from rural households and communities were collected using survey and ethnographic study methods. The survey component was crucial in gaining a deeper understanding of poultry livelihoods, including animal diseases and genetic formations, marketing chains, and poultry use, and also in providing quantitative information to back the qualitative. A multi-stage cluster sampling approach was used to select study sites in rural areas of Arua, Lira, Kanungu, Jinja and Tororo districts. Study participants were randomly selected using lottery methods from a list of eligible households in each selected village.

The ethnographic study involved use of in-depth KIIs and FGDs, which were important in gathering rural poultry farmers' experiences, insights on breeding, use and markets, feelings, perceptions, and socio-cultural practices and attitudes about poultry farming. The ethnographic study also helped clarify how rural poultry farmers deal with vulnerabilities and disease threats, and their perceptions about new and improved genetic breeds compared with local breeds.

Study population

The study targeted smallholder poultry keepers whose livelihood and food security could easily be threatened by HPAI, and the communities in which they live. All respondents were at least 18 years of age, as this is the age at which people in Uganda are considered mature and able to make decisions on their own. Women are often involved in poultry farming, and were particularly targeted for the sample, because they are directly involved in backyard poultry farming and generate income that benefits their children through improved household nutrition.

The populations for this study were household members in randomly selected villages in five districts. Some of the farmers interviewed, especially in Arua and Kanungu districts, did not possess chickens at the time, but participated in the study because they had lost their entire chicken stocks during the previous six months, following an outbreak of Newcastle disease (NCD).

Study areas

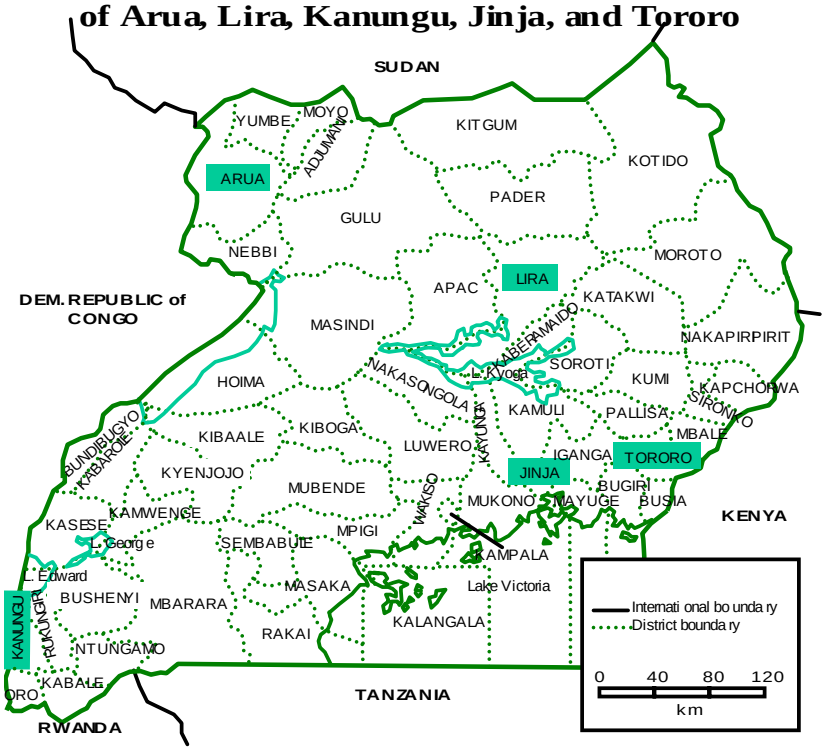
The study was conducted on a representative sample in rural areas of Arua, Lira, Kanungu, Jinja and Tororo districts (Table 2). The samples in Jinja and Tororo district were about half the size of those in Arua, Lira and Kanungu. Arua, Lira, Kanungu and Tororo were selected because these are the districts with the highest numbers of small indigenous poultry farmers in Uganda. Jinja was selected because of an earlier poultry project to combat NCD, and to include experiences of urban poultry farming, as Jinja is predominantly urban. The districts chosen represent different regions of Uganda, as shown in Figure 2.

Table 2 Distribution of household respondents by district

District	Frequency	Percentage
Arua	136	25.8
Jinja	64	12.1
Kanungu	128	24.3
Lira	135	25.6
Tororo	64	12.1
Total	527	100.0

Figure 2

Figure 2: Map of Uganda Showing Districts of Arua, Lira, Kanungu, Jinja, and Tororo



Sample selection process

The study design called for a multi-stage cluster sampling approach, with a total sample size that was representative of the project areas. Main sampling units were districts and sub-counties selected purposively after consultations with the FAO technical team, local authorities and opinion leaders in each district. Two sub-counties, two parishes and two villages were selected randomly in each area. In each village, at least 15 interviews were completed, and

the total study sample was 527 respondents. In each selected village, the researchers generated a list of eligible households, following screening of households for poultry farming. Natural village boundaries, such as rivers, valleys, hills, roads and footpaths, were used to demarcate the boundaries for sampling purposes. Local leaders were particularly helpful in the exercise.

FGDs and KIIs

FGDs involved between eight and ten community members in each of the sampled study areas. Separate FGDs were arranged for men and women. This allowed comparisons between the experiences of men and women, who tend to have different roles within the household and the community regarding such issues as nutrition and health. It also ensured that women could express themselves more freely than would have been the case if men had been present. KIIs were arranged to provide a deeper understanding of poultry livelihood issues and to complement and provide deeper insights into the findings of the survey analysis. These interviews involved local leaders, opinion leaders, district staff, significant farmers involved in animal production, and national leaders.

For the purposes of this study, the head of household was defined as the person who usually makes purchasing decisions in the household. In cases where the household head was not available, and not within 15 minutes waiting time, another available adult was asked to respond to the household survey. Selected households were to be replaced if all household members were absent on two occasions, but no selected household had to be replaced in this study.

Data collection exercise

Recruitment and training

The research team took great care in the recruitment process to ensure that qualified, experienced and competent staff were involved in the project. This followed internal advertisements on the notice boards of the Faculties of Social Sciences and Arts, the Makerere Institute of Social Research and the Faculty of Economics and Management, and referrals of colleagues from sister departments. Short-listed applicants were interviewed by the senior researchers to establish their knowledge of the study districts and research process, competence in social research methods, confidence and experience. As well as technical qualifications, experience of conducting surveys and FGDs, and language proficiency in Lusoga, Rukiga, Lugbara, Luo and Jopadhola were sought. A total of 21 research assistants were selected.Training was carried out in English because of local language diversity among the research teams. The training covered some basics of research, discussion of the research proposal on which the tools were based, research instruments and mock interviews with trainers as respondents.

It also included going through the survey instruments question by question to ensure a clear understanding of each and uniform responses. Research instruments – survey questionnaires and KII and FDS guides – were translated into local languages and then back into English to ensure that the research assistants had elicited similar responses.

The pre-test exercise

The original plan was to pre-test in Mukono and Luwero, but following consultation with other researchers, Kayunga was found to be the best pre-test area because of its multi-ethnic

composition and poultry production and because it had similar characteristics to the study areas.

The multi-ethnic composition allowed research assistants to pre-test the survey instruments in their own languages. Three sub-counties were used as pre-test sites: Kasawo, Kayunga and Nazigo. The pre-test exercise was conducted to ensure the clarity, consistency and reliability of the study instruments. Minor adjustments were made at a post-test meeting in which all research assistants participated.

Results

Household and community livelihood profiles involving poultry

In most poor rural communities, a large proportion of poultry keepers apply smallholder production systems. Birds kept in these systems represent an important contribution to household food security and income, including social capital, and to poultry biodiversity at not only the household and local levels but also the national level. A large percentage of poultry farmers are women, because men usually perceive poultry farming as a minor activity for women and children, and not worthy of men's efforts. Women therefore play a significant role in poultry keeping, and their poultry activities contribute directly to household food security and the well-being of children. However, current veterinary strategies and policies have not been designed with these stakeholders in mind. For example, while diseases can be highly damaging to smallholder assets, the process of controlling them can also inflict damage. The death or culling of large numbers of birds of indigenous breeds runs the risk of irrevocably losing an important genetic resource.

Demographic characteristics

The survey sought to provide background information for designing strategies to minimize the devastating impacts of poultry diseases such as HPAI. The data it collected from households included the number of people per household, along with their ages, genders, religions, education levels, marital status, etc, which are critical for analysis to inform policy.

From the 527 households included in the survey, demographic characteristics were recorded for 3 366 individuals. The distribution of numbers of people in each household, shown in Table 3, indicates that households most commonly had five to seven members. The highest number of household members recorded was 16, and the lowest one.

Table 3 Distribution of household sizes

Number of people in household	Frequency	Percentage
1	2	0.4
2	20	3.8
3	36	6.8
4	59	11.2
5	86	16.3
6	85	16.1
7	85	16.1
8	65	12.3
9	34	6.5
10	19	3.6
11	18	3.4
12	10	1.9
13	3	0.6
14	2	0.4
15	2	0.4
16	1	0.2
Total	527	100

For the total sample of 527 households, 416 respondents were men and 111 women, with minimum ages of 19 years for men and 18 years for women. The average ages of the individuals interviewed were 45 years for men and 49 years for women. For both sexes, the highest age of respondents was 90 years (Table 4).

Table 4 Summary statistics of respondents' ages (in complete years), by sex

Sex	No.	Min. age	Mean	Max. age
Male	416	19	45	90
Female	111	18	49	90
Total	527	18	46	90

Table 5 indicates that 78.9 percent of respondents were married, and 12.7 percent were widowed. Others were cohabiting, separated or divorced. Most were Christians, with 5.5 percent reported as Muslims and 2.7 percent subscribing to other religions, including African traditional belief systems. The majority of respondents had completed primary education (54.5 percent), but 16.1 percent had never attained an education level. Of the 3 366 household members represented, 58.2 were reported to have completed or be completing primary school education, and about 11 percent had no formal education. Overall, 50.6 percent of the total household members were female, and 49.4 percent male. This mirrors the national population structure of Uganda, where females constitute about 52 percent and males 48 percent of the total.

Table 5 Demographic characteristics of individual respondents

Variable	Frequency	Percentage
Current martial status		
Married	416	78.9
Cohabiting	19	3.6
Divorced	7	1.3
Separated	11	2.1
Widowed	67	12.7
Never married	7	1.3
Religion		
Catholic	193	36.6
Protestant	254	48.2
Moslem	29	5.5
Born again	37	7.0
Other	14	2.7
Highest education level attained		
None	85	16.1
Primary	287	54.5
Secondary	106	20.1
Post secondary	49	9.3
Sex		
Male	416	78.9
Female	111	21.1

Major sources of livelihoods and income

The study was interested in finding out the most common sources of livelihoods in the village communities where it was conducted. From the interviews and the ethnographic study, the most common sources of income for rural communities were crop production activities followed by commerce, including petty trade in simple expendable commodities, and rural employment. The most frequently grown crops included sorghum, bananas, sweet potatoes and cassava, while animals were cattle (local and cross-breeds), goats, sheep, pigs, and birds such as

chickens, turkeys, guinea fowls, ducks and pigeons. Table 6 shows respondents' most important sources of income by district. The table show that apart from reporting crop production as a common source of income, respondents reported commerce, employment and animal husbandry as sources of income at household level.

Table 6 Major Sources of income by District

Major source of income	Arua	Jinja	Kanungu	Lira	Tororo	Total (%)
Crop production	51.5	37.5	87.5	88.9	96.9	73.6
Commerce	3.7	25	0	0.7	1.6	6.3
Employment	11.8	7.8	6.3	3	0	5.1
Animal husbandry	8.1	6.3	3.1	5.2	1.6	4.4
Semi skilled	3.7	9.4	1.6	0.7	0	2.7
Casual labour	4.4	4.7	0	1.5	0	2.1
Other profession and activities	16.9	9.4	1.6	0	0	5.9
Total	100.0	100.0	100.0	100.0	100.0	100.0
N of Cases	136	64	128	135	64	527

While respondents reported the major source of income as crop production followed by commerce or small petty business, when asked about what other sources of income at household level, animal husbandry came number one on the list. Thus, it is possible that while respondents report crop production as the main source of income for the household, they also engage in animal husbandry activities though this is on a small scale.

This information above collaborates well with one obtained from the ethnographic interviews where majority of the respondents argued that the main livelihood activities of households were subsistence agriculture, small businesses, and other categories of activities, such as mining, transportation, especially Boda boda[6]. One focus group discussion respondent in Ayira village, Barr Sub County, Lira district noted that, "When you go around our area, you will find every one digging and having crops in the garden."

For example, in Arua district the most common livelihood activity is farming where majority of residents also are involved in poultry farming at some level both local and improved. The improved poultry farming is one that is mostly labour intensive compared to the local farming that is largely free range. While every household in the district is involved in poultry farming, almost all residents are involved in crop production with major crops grown, such as cassava, beans, maize, and fruits like mangoes, avocadoes, oranges. In some parts of the sub-county, we have farmers who have the potential to grow vegetables like onions, cabbages. The valley bottoms are usually reserved for sugarcane growing though it is on a small scale. Small retail businesses are also common. For districts located along international borders (Arua, Tororo, and Kanungu), the youth normally smuggle goods, such as sugar, petrol and other items from neighbouring countries into Uganda. There are also farm produce that form part of the sales markets. For example, in Arua, there are two big markets and operate on a half day basis to accommodate interests of Uganda and Congolese, i.e. on the Congo, the market operates in the morning to noon while the Ugandan market called Odramacake operates in the afternoon time. Other sources of livelihoods include casual labour.

Several factors have helped people engage in particular livelihood activities. These include the environment that is conducive for farming, a good vegetation cover and fertile soils though poor in some other areas but can still maintain crop growing. Because of uncertain weather conditions, people still grow food crops not for commercial but for mainly home

[6] Men and young boys, after dropping out of school due various reasons, dominate the rural transport sector. These usually transport passengers and goods on bicycles and motorcycles. The name 'boda boda' originate from the practice of transporting goods across international boarders, especially between and Uganda and Kenyan boarders. It literally means from border to border.

consumption purposes. However, occasionally when there is need for money to cater for some important family need, food crops or poultry would be the first items considered for sale.

In case of poultry farming, availability of local breeds that are resistant to diseases and adoptive to the environment is a great resource. Much as the improved ones are kept indoors to avoid diseases and obtain maximum profits on top of daily feeding, local breeds adapt so well with the environment and usually scavenge for their own food. Among the factors respondents mentioned as facilitating poultry livelihoods is the availability of local loan schemes. For example, in Lira, having access to a loan facility is very important. Others include access to oxen for cultivation and hiring it out to other community members.

Respondents' sense of well-being compared with other community members

It was important to assess people's satisfaction with their present livelihood activities before attempting to understand poultry's contribution to livelihoods. This was achieved by asking respondents how they rate their own levels of well-being compared with those of other community members. This helped assess how people rated their livelihoods and their level of satisfaction with what they were doing or obtaining. Respondents ranked their own levels of well-being compared with those of other community members as very high, high, moderate, low, or very low. The results are indicated in Table 7 below.

Level of well-being rated by respondents

Of the 526 respondents, 48.9 percent (257) said that their well-being was moderate or high, and 1.9 percent (ten) reported very high well-being compared with the rest of their communities. Of these ten respondents, four were from Tororo. Of the 257 respondents reporting moderate well-being, 85 were from Arua (Table 7). The responses can be classified into two general categories: very high, high or moderate; and low or very low. Many reasons were advanced for respondents rating their well-being as very high, high or moderate, including having a job, having enough food at the household level, being able to pay school fees for their children, having enough land, having a permanent house, engaging in farming as a source of income, being educated, and having good transport. Those who rated their livelihoods as low or very low also gave many reasons, including struggling to procure necessities such as salt and paraffin, not being educated, experiencing the death of a family member, being elderly, being unable to pay school fees, having limited and unproductive land, and having no source of income (Annex II).

Table 7 Distribution of well being rank by district

	Arua	Jinja	Kanungu	Lira	Tororo	Total
	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)
High	10 (7.4)	15 (23.4)	17 (13.3)	7 (5.2)	6 (9.4)	55 (10.5)
Moderate	85 (62.5)	18 (28.1)	77 (60.2)	56 (41.8)	21 (32.8)	257 (48.9)
Low	41 (30.1)	31 (48.4)	34 (26.6)	71 (53.0)	37 (57.8)	214 (40.7)
Total	136 (100.0)	64 (100.0)	128 (100.0)	134 (100.0)	64 (100.0)	526 (100.0)

Table 8 ANOVA test showing respondents well being and poultry produced

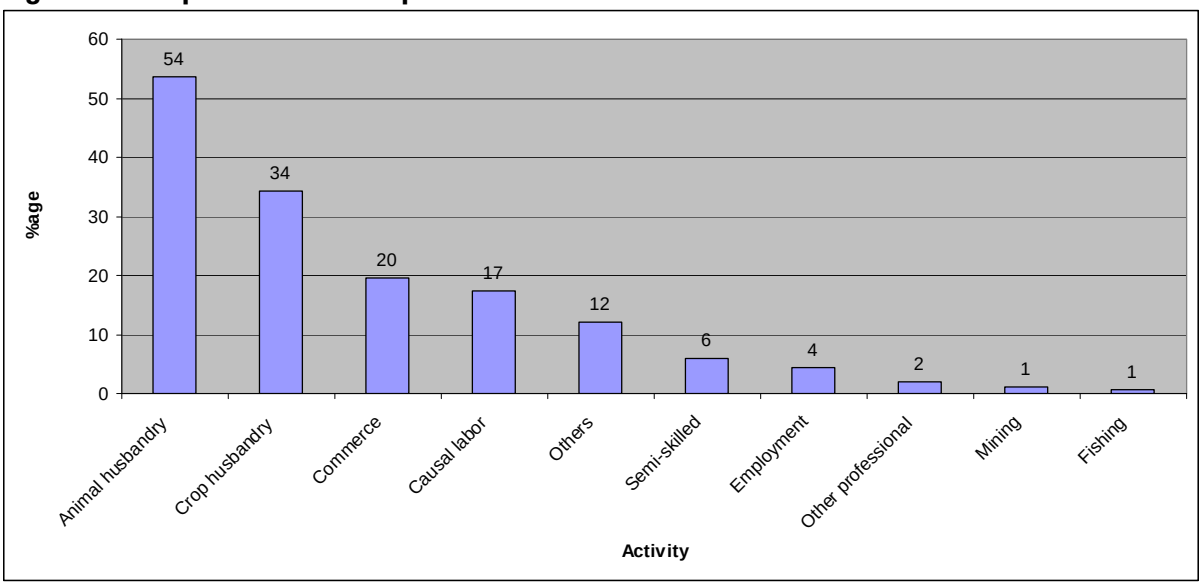
		N	Mean	P-value
Poultry output per year-eggs	High	45	6300.33	
	Moderate*	161	140.16	0.000
	Low*	104	77.23	0.001
Poultry output per year-chicken	High	50	162.70	
	Moderate*	204	39.26	0.000
	Low*	148	27.30	0.000
Poultry output per year-chicks	High	42	142.83	
	Moderate*	137	115.41	0.391
	Low*	86	43.74	0.004

* Comparison with respondents who reported in a High well being category

In order to determine the relationship between respondents who reported their well being as high, moderate, or low and poultry ownership (measured by the number of poultry products in a year), we used ANOVA test to determine whether the number of egg produced per year in the different well being categories was the same. The results (table 8) show that there is a significant difference between 'High' well being and those reported 'moderate' or 'low', for example, the mean egg production per year for category 'High' is 6300.33 compared to 140.16 per year (p-value = 0.000 and 0.001 respectively at 5 percent level of significance). The results for the number of chicken produced per year is also significantly different between category 'High' and 'moderate' and 'low' while for number of chick output show that there are no significant differences between category 'High' and 'moderate' (p-value = 0.391 at 5 percent level of significance). Thus, respondents who reported their well-being as high also had significant number poultry products per year.

The indicators used to rank well-being in relation to others in the community included ability to feed the family, cultivation of own food, ability to pay school fees, owning a sizeable piece of land, family size (including extended family members), ownership of household assets, and ownership of a good house (Annex III).

Figure 3 Proportions of respondents other livelihood activities



Significant changes over recent years

Over the last five to 20 years, significant changes have taken place in people's livelihoods in all the districts. These changes include the emergence of new varieties of crops and poultry breeds, exhausted soils, and seasonal changes. The emergence of motorcycle riders (boda

boda) has made it easier for people to move from one area to another. The formation of credit and savings groups has increased over the last couple years, with sensitization programmes helping people to come together in groups for mutual support. This helps people to manage their livelihoods better than, say, 20 years ago. Markets for agricultural produce such as maize, millet and beans used to be limited, but price increases have benefited farmers. Increased security, especially in Arua and Lira districts, allows farmers to enjoy the products of their own labour. A respondent from Kanungu said, "Sometimes when you could sell coffee you would not enjoy the money because thieves would come and take it from you or even kill you."

Group formation

Respondents mentioned the formation of social groups for practical training as an agent of change in rural communities. The introduction of new animal breeds has also led to many formal and informal community groups emerging with the purpose of improving livelihoods; as key informants acknowledged, it is virtually impossible for an individual farmer to finance the establishment of a new poultry project, and the best solution is for people who face similar challenges to join forces. In many of the areas visited, community organizations had been formed for the raising of hybrid goat or chicken breeds or for crops such as rice. This implies that agricultural diversification is increasing in many rural communities. Where farmers are motivated, there are likely to be improvements in their livelihoods.

Access to education and employment

In Jinja, there were noticeable differences in literacy and illiteracy rates among the generations. Literacy is important, for example, when a farmer wants to sell something and has to produce documents that authenticate his/her ownership or right to sell. In addition, where village soils are infertile and there is insufficient land, literate people have a wider range of livelihood options. Respondents from Mawuta and Kainhogoga villages in Jinja reported that they had worked in factories during the 1970s and 1980s, but that the factories had since closed. Nyanza Textile Industries used to employ many workers but now employs only about 1 000, and the introduction of computers means that those without the required skills are left out. Busoga growers lost their machines when British American Tobacco closed the Jinja plant. There used to be more sources of income, but now farmers struggle to generate money, while rising commodity prices exacerbate the problem.

When there were more opportunities, poultry and agriculture ceased to be major priorities, and became instead fall-back livelihoods for those with no alternatives. Families still tend to assume that this is the case, regardless of how important poultry is to them, and this attitude affects the scale and output of poultry livelihoods. However, as other opportunities are now limited, poultry farming has become a major investment for ensuring survival and the payment of children's school requirements and medical expenses.

Soil infertility

Respondents also noted that soils have become infertile owing to subsistence cultivation. Households used to be able to obtain good yields from crops grown on only small pieces of land, but today in spite of the efforts invested in crop production, yields are not enough, and there is insufficient land to provide plots for all households. A respondent in Kanungu said, "Soils used to be fertile when they were still virgin and you would get good harvests and survive. Now, our soils lost fertility, whatever you grow there doesn't yield well. You put cassava, it comes out stunted, you put sweet potatoes, and it comes out stunted." Seasonal weather changes exacerbate the problems with soil infertility; for instance, wet seasons used to provide enough rain to allow crops to grow, but now crops struggle to survive the dry season.

Food insecurity

Another significant change is the rise in prices for essential commodities that used to be cheap and affordable for the income levels of rural communities. Over the last five years, food items have become far more expensive, because of low productivity, the increased costs of farm inputs such as seeds and pesticides, and unpredictable weather patterns. In the past, good yields made it possible to store food in local granaries, but population increase and continued land fragmentation mean that good yields are no longer guaranteed. Previous generations used the food stored in granaries to maintain their families, but now farmers take any surplus to market for sale. Goats also used to generate income but this is no longer the case. According to a female FGD respondent in Arua, "Those days most things were got from the garden, the only business used to be brewing local brews, but all food was got from the garden. Now the difference is that these days, there is virtually nothing got from the gardens, even granaries do not exist. People are just on the road looking for money to buy daily food and there is nothing kept for the rainy season." This is perhaps due to increased commodity commercialization and population growth leading to greater demand on the market. The problem is exacerbated by high transport costs, which are often used as an excuse to cheat rural farmers by offering them low prices. Most rural farmers depend on small pieces of land that are overused, leading to loss of soil fertility and thus poor yields.

Gender and household changes

Most respondents recognized the changes that have taken place at the community and household levels. For example, women in Arua reported that husbands and wives used to work together in their gardens to grow millet and cassava. They had granaries at home to ensure food security and there was enough food for home consumption. Today, however, men and women do not cooperate with and understand each other. Women bear the burden of providing for the home, and men provide little or no support. A female respondent in Arua said, "In some homes, some men support the homes but in others they do not, so you find that the woman prepares tea in the morning then goes to Andelizua market to buy items like avocado and takes them to town for sale. Then after selling, she buys cassava flour, beans and then goes home to prepare for the children at night. She again goes back the following day as a routine. This is the change we see now."

Women usually cooperate with their husbands to grow or work for food, but respondents reported that many men have turned to drinking alcohol and have abandoned the concept of cooperating with their wives. Women have to work alone to find money for school fees, while men look on, claiming that girls in school are likely to become pregnant and turn to sex-based work. Population increase, combined with scarce resources, such as land, tends to worsen the situation. For example, there used to be sufficient food to feed the people who could not produce their own, in exchange for their help with cultivation, instead of using physical capital or money (Arua responses). When the population was low, everything could be obtained from home, but now people have to struggle. Reductions in chicken numbers also affect livelihood patterns today. NCD outbreaks make it difficult for families to obtain money for their children's school books. In addition, increased rural-urban migration of energetic youth is leading to the slow abandonment of rural areas.

Reasons for the changes

Respondents were asked about the factors that contribute to these changes. First, it appears that agricultural development has generated the most change. The introduction of coffee and tobacco had brought a lot of money, especially in Jinja and Kanungu districts, which was used to pay for children's education. Respondents argued that educated children helped their parents to survive in old age, as education is likely to guarantee jobs with good benefits.

Second, increased poverty has affected how rural people organize their livelihoods (female FGD in Kayembe village, Kanungu), and has caused loss of soil fertility, poor harvests, animal diseases, and very high death rates. Land scarcity forces people to switch to other livelihood activities, especially in Kanungu district. Third, seasonal changes, such as longer dry seasons, affect poultry rearing because birds die of heat and lack of water, and crop production, because temperatures are too high.

Most respondents reported that they had learned a lot about livelihood activities from their parents, but had had to adapt to the changing times. One of the ways of doing this is to engage in multiple livelihoods by, for example, introducing pigs, rabbits, etc.

Animal husbandry livelihoods

Respondents mentioned keeping cattle, goats, pigs, sheep, oxen and donkeys. Among the birds were chickens, ducks, turkeys, guinea fowls and pigeons (Table 9).

Table 9 Types of livestock kept by respondents (n = 527)

Animals kept	Arua	Jinja	Kanungu	Lira	Tororo	Total	Percent
Chickens	109	53	107	115	55	439[7]	83.3
Goats	106	27	79	95	48	355	67.4
Cattle (local)	56	13	14	65	53	201	38.1
Pigs	51	7	39	19	36	152	28.8
Ducks	24	0	16	14	15	69	13.1
Sheep	15	6	5	14	9	49	9.3
Oxen	0	0	0	36	7	43	8.2
Turkeys	4	4	1	4	12	25	4.7
Guinea fowls	3	0	0	8	5	16	3.0
No livestock	2	2	6	4	0	14	2.7
Hybrid cattle	1	6	2	2	2	13	2.5
Other livestock	2	3	0	5	1	11	2.1

Other livestock kept were pigeons (seven respondents) and rabbits (four): 12 pairs of pigeons was the highest number kept, and six rabbits. This indicates that there are diversified animal husbandry livelihoods, with homesteads keeping a variety of animals and birds rather than relying on only one type. It is important to note that chickens were the most common livestock kept; about 83 percent of respondents kept from one to approximately 800 birds (Table 10). Goats, cattle and pigs followed in frequency. One can argue that in terms affordability and conversion from livestock to other forms of capital, chicken ranks number one followed by goats. It is common to find families who begin with poultry as the first line of physical capital and afterwards convert to rearing goats after selling off birds. FGD and Key informant interview data suggests that those who own chicken usually sell them to buy goats and eventually cattle. This clearing depends on the affordability and calculating the risks involved. For instance, it is easy to risk and keep birds that can easily die of diseases but are easy to replace than keep cattle, which may not easily die from diseases but require a lot of resources, such as initial capital investment and the amount of time needed (see Rakodi 1999, Gueye 2001).

[7] People keeping/amount gotten from respondents

Table 10 Summary statistics of numbers of livestock kept by respondents

Livestock	No. of responses	Min.	Lower quartile	Median	Upper quartile	Max.	Range
Chickens	436	1	3	6	11	800	799
Goats	355	1	2	3	5	32	31
Local cattle	200	1	2	3	5	30	29
Pigs	152	1	1	2	3	15	14
Ducks	68	1	2	3	5	30	29
Sheep	49	1	1	2	5	140	139
Oxen	43	1	2	2	2	6	5
Turkeys	24	1	2	4	8	60	59
Guinea fowls	16	1	2	3	4	75	74
Hybrid cattle	13	1	1	2	2	10	9

The study was interested in ascertaining whether or not the respondents who reported keeping poultry as part of their animal husbandry activities did so as a business. Of the 510 respondents to this question, 43 percent (221) answered yes, while the remaining 57 percent said it was not a business but an activity expected in every household. Other reasons given to explain why poultry was not a business included keeping very few birds, having problems with diseases, lacking the capital to finance commercial poultry production, and having poor breeds. Rural poultry farmers invest a lot of time (labour), resources (medicines, finance, land) and feed. On average, rural farmers invest between three and seven hours a day on poultry-related work, such as constructing temporary sheds for their birds, scaring away predators, and seeking medicines to treat or prevent diseases. Each household has an average of six chickens (see median in Table 10 above). The majority of respondents reported that their poultry was free-range and therefore needed no inputs from its owners.

Poultry farming and livelihoods

Most respondents from both the survey and FGDs noted that their poultry farming had decreased (52.9 percent) over the last ten years, but 30 percent claimed it had increased. Among the explanations for decreased poultry were diseases, which are a major challenge for rural populations, poor farming methods, predators, the poor breeds available, and the presence of internally displaced people in camps, especially in Lira and Arua districts. However, there were contradictory findings, as respondents who reported increased poultry farming argued that it was because of good farming practices and government interventions.

Diseases

Poultry diseases were reported to have increased in the last ten years (by 64.9 percent of respondents). Among the reasons given were that households are close to each other, there are more outbreaks of diseases, including new diseases, and veterinary services are lacking, while rural subsistence farmers cannot afford private services. Those who reported a decrease in diseases said that this was probably because of vaccination campaigns that might have reduced the impact and incidence of disease (see the section on Poultry diseases further on in this chapter).

Breeds

About 54.1 percent of survey respondents reported no change to poultry breeds in the last ten years, because most respondents kept local breeds (87.6 percent). Lack of sensitization was also reported as a reason for no change in breeds. Other respondents reported increased breed variety because the government had introduced new hybrids, especially in Tororo and Jinja

districts. Some respondents were of the view that some local breeds had disappeared because of cross-breeding and disease.

Poultry farming opportunities

Regarding the opportunities for poultry farming, 44 percent of respondents reported that they had increased, while 28.7 percent noted a decrease. The reasons advanced for increased opportunities were the development of trading centres where there is high demand for poultry products, increased awareness of the value of poultry products as sources of protein, and access to drugs from the numerous drug stores. Those reporting a decrease in opportunities cited increased disease outbreaks, lack of awareness about the existence of opportunities for poultry farming, land shortages, and the existence of local breeds that are easy to look after (because this discourages farmers from experimenting with more labour-intensive but higher yielding breeds.

Poultry and other informal networks

Researchers also looked at the different social networks that facilitate or hinder poultry livelihoods. Respondents were asked how poultry farmers connect with other people. Answers varied by area and gender, but most respondents reported having learned how to keep poultry from friends. People can ask their friends how to go about poultry farming, and are willing to help each other. This cooperation is not limited to friends, but extends to relatives, neighbours and other farmers. Respondents valued the help they received from friends and relatives. A male FGD participant in Jinja noted, "I am grateful to the person who introduced me to farming. I am very happy because it has helped me get where I am today. It was a friend who brought Mikago [friendship] and helped when we did not have money and could not get a cow to get milk. Now we are able to get milk together with others and earn a living".

People have to collaborate with their neighbours when they are establishing a poultry business. They consult each other about what breeds to keep, and when disease outbreaks occur or one of them is putting up a poultry shed. It is also easy for neighbours to form associations or groups for poultry farming. One respondent noted, "I trust my neighbour because we don't keep our chickens on close range but rather our chickens feed on free-range. [Sometimes] your chickens may need to lay eggs but will go to the neighbour's home and lay there. If your neighbour [sees] your chicken preparing to lay eggs, sometimes you can tell him to let it lay there. But if a neighbour is not trusted, such a neighbour will not even tell you, and you will never see the eggs." Relatives were not considered to be as supportive as neighbours, because relatives tend to be scattered in many parts of the district. Neighbours in the village were rated higher than relatives because they are the easiest people to consult and are always near at hand. A female FGD participant in Tororo said, "I have tried to keep turkeys – about three females and males. However, the people who helped me to keep these birds were neighbours because the turkeys did not stay in one place but rather moved to the neighbours". My neighbours were not bothered by the turkeys' presence, and never stole or beat them, and recently the turkeys matured and I sold them off."

The poultry expertise that respondents reported they had learned from friends and neighbours included:

- information about the vaccination of domestic birds;
- advice on the construction of enclosures to limit the birds' movement;
- tips about how to keep domestic birds, particularly that chickens should not share houses with humans, as human diseases can be transferable to birds and vice versa;
- that poultry houses should be ventilated to allow enough fresh air to circulate;
- advice about different chicken breeds.

According to FGDs, relatives were less of a resource, because they visited households to eat rather than to bring new ideas. Some respondents reported that people would rather sell their birds for their own household's sustenance than give them to relatives. In some cases however, neighbours were reported to be less cooperative, especially in disease outbreaks. For instance, a neighbour may fail to treat her/his diseased birds, which promotes the spread of diseases.

Lack of exposure to people with experience of poultry businesses makes it difficult for farmers to improve and was attributed to isolation or distance from the main city. For example, one respondent in Kanungu said, "Now you see, I don't think there is any of us who has ever done a poultry project. It is not that we can't manage, but you know when you get advice from experienced ones you develop a feeling to start such a business. So where do we get that here? Our town is Kihihi. When we are there, it's like we are in London" [sarcastic]. Respondents argued that people interested in keeping exotic birds need to consult those with experience of exotic poultry keeping, who can advise on shelter construction, the type of medicines to use, water supply systems, etc.

Poultry marketing

Researchers in the study were interested to identify the average amounts of poultry products produced, consumed and spoiled per household per year. This helped to indicate the level of poultry products households consume compared with what is left for sale. Table 11 shows the quantities of selected poultry products produced in a year, and indicates that more eggs are produced (about 60 per homestead per year) than chickens (median = 24). On average, fewer chickens are consumed than sold, implying that most of the chickens reared at homesteads are sold rather than consumed. Rural farmers are more likely to sell mature chickens than young chicks and eggs.

Table 11 Average numbers of poultry products produced consumed and spoiled/died per year

	Number	Min.	Lower quartile	Median	Upper quartile	Max.
Eggs produced	311	3	30	60	145	164250
Consumed	241	1	10	20	50	1440
Spoiled	156	1	6	12	25	2352
Chickens produced	403	1	12	24	48	2400
Sold	269	1	5	10	20	2220
Consumed	350	1	4	7	12	130
Given away	182	1	2	3	5	50
Died	282	1	5	10	21	126
Chicks produced	265	1	20	50	96	2000
Died	237	3	11	22	40	900

Respondents reported that marketing opportunities for poultry products were available because they were close to markets and there was high demand for products such as eggs and meat, especially during the festive seasons. Regarding poultry types, respondents reported that only a few people reared ducks, which makes them expensive and not readily available in rural areas. When asked where they marketed their poultry products, the majority of respondents reported taking them to markets and/or hotels (52.4 percent). Others argued that the local demand for poultry products were high (34.7 percent) or that they were located near main roads where traders are easily accessible (5.8 percent). A few respondents reported selling their poultry products through a network of friends and relatives (1.3 percent). From

the study findings, the buying and selling of poultry does not follow kin or friendship patterns; about 53 percent of respondents did not sell to relatives or friends. Respondents rarely sold to relatives, friends or village neighbours.

The majority of respondents reported that there had been increases in the marketing and prices of poultry over the last ten years because of cross-border markets, especially in Arua (with DRC), and population growth. Others argued that low supply was leading to increased demand and markets for poultry products. The Uganda Indigenous Birds Breeders' and Rearers' Association aims to promote traditional bird production and capabilities (Mugga, 2007). The challenge is that most local poultry producers are located in rural areas, where access to commercial feeds and technical assistance is almost non-existent, although it is easier to sell the products.

Importance of poultry to households and communities

Poultry is a very important resource that is kept not only for money, which is converted at the time of sale but is also kept for other socio-cultural and nutritional requirements. The most obvious role of poultry is provision of eggs as a source of money and good nutrition. Eggs are the easiest to convert into hard cash used to settle basic needs in a home, such as salt, sugar, paraffin, cooking oil, etc. Though eggs are easier to convert into cash, it does not fetch as much as that obtained from selling chicken. Data from household interviews confirm that the commonest poultry product sold for income is chicken (53.5 percent) rather than eggs (17.5 percent). Money obtained from selling poultry usually helps homesteads meet the demand for school fees for children and buy clothing in case a household owns many birds. It is important to note that households that use eggs for home consumption only consume damaged eggs while the 'good eggs' are taken to the market for sale. The table below shows the mean and median of different outputs from poultry. The median out for eggs per household is 60 eggs compared to 24 chickens in a year. The survival rate of newly hatched chicks is almost 0.5, i.e. 50 chicks divided by 24 chicken that survive. In terms of district differences, Jinja has the highest amount of eggs and chicken produced per year followed by Tororo. This is possibly because of the location, i.e. Jinja as an urban area with many people rearing chicken on a commercial basis. While the number of poultry outputs is about 60 eggs, about 83 percent (50 eggs) of the eggs are sold per year. Again, Jinja district shows a large number of eggs sold per year compared to other districts (see table 12 and 13 below).

Table 12 Showing number of poultry outputs per year by district

District		Eggs	Chicken	Chicks	Ducks	Meat[8] (Kgs)	Turkey	Guinea Fowls
Arua	N	55	100	45	14		4	2
	Median	30	30	36	10		2	27.5
Jinja	N	37	48	32	1		4	
	Median	120	20	20	14		11	
Kanungu	N	108	103	106	8			
	Median	100	20	60	19			
Lira	N	63	104	48	7	7	2	2
	Median	30	20	38	6	2	39	38.5
Tororo	N	48	48	34	8	1	2	3
	Median	100	49	76	20.5	5	6	1
Total	N	311	403	265	38	8	12	7
	Median	60	24	50	10	2	7	6

[8] Meat is measured in kilograms (Kgs)

Table 13 Showing number of poultry outputs sold per year by district

District		Eggs	Chicken	Chicks	Ducks	Meat Kgs	Turkey	Guinea fowls
Arua	N	5	72	1	5			1
	Median	10	8	3	5			30
Jinja	N	15	29	4			3	
	Median	180	12	7.5			9	
Kanungu	N	51	67	5	4			
	Median	50	10	30	11			
Lira	N	9	73	4	2	2	1	1
	Median	10	10	10	12	5.5	2	18
Tororo	N	4	28	3	1		1	1
	Median	80	10	10	4		4	2
Total	N	84	269	17	12	2	5	3
	Median	50	10	10	4.5	5.5	4	18

Poultry is important because it caters for other social functions. For example, when visitors arrive, families usually use a chicken to prepare a good meal, as it would not be economical to slaughter a larger animal such as a goat. An FGD respondent in Arua noted that, "For me I think it's the size; for example, for chicken you just pick one and slaughter, which would not be logical for slaughtering a goat for one visitor." A female FGD respondent in Nyangila, Arua district said, "When a visitor comes, it's chicken that can save you from embarrassment." Thus, a chicken is used when a visitor appears unexpectedly and when the household has nothing else to offer. When a child falls sick, domestic birds are also the easiest item for a household to convert into financial capital to pay for treatment.

Household interview results indicated that most respondents sold poultry to obtain food (65.5 percent) or household items and consumables (62 percent), such as pans, paraffin, children's school fees, clothing, medical and other personal expenses. Table 14, which lists the possible benefits from poultry, shows that poultry is also occasionally used to buy household property, such as a bicycle. Most respondents perceived chickens as primarily a source of food. Larger household expenditures such as bicycles, house repairs and family businesses are less frequently financed from the sale of poultry than smaller expenditures. This implies that poultry is not easily transformed into long-term family possessions, but instead helps solve urgent household needs as they arise, such as school fees and children's clothing. Chi-square test statistics show that there were no significant differences (at 0.05 significance = 0.0000) among districts regarding the benefits from poultry products. However, there were significant differences among districts and poultry benefits in terms of business outcomes, taxes paid and the acquisition of automobiles. People from Lira, Arua and Jinja seem to benefit more than those from Kanungu and Tororo.

Table 14 Benefits or assets obtained from the proceeds of poultry farming

Benefit/asset	Arua	Jinja	Kanungu	Lira	Tororo	%	*p-value*
Food	74.3	50.0	76.6	80.0	9.4	65.5	0.000
House utensils	67.6	40.6	55.5	84.4	37.5	62.0	0.000
Children's education	27.9	39.1	35.9	49.6	17.2	35.5	0.000
Clothes for children	24.3	15.6	32.8	60.0	21.9	34.2	0.000
Medical treatment	23.5	18.8	26.6	64.4	21.9	34.0	0.000
Personal expenses	13.2	26.6	21.1	37.8	17.2	23.5	0.000
Other	11.8	17.2	18.8	11.9	34.4	16.9	0.001
Friendship network	8.8	20.3	8.6	23.0	1.6	12.9	0.000
Bride price	16.2	0.0	0.0	28.1	7.8	12.3	0.000
Bicycle	2.2	4.7	1.6	16.3	4.7	6.3	0.000
House repair	3.7	1.6	2.3	14.8	0.0	5.5	0.000
House construction	3.7	3.1	0.8	3.7	0.0	2.5	0.294
Business	0.7	3.1	1.6	2.2	3.1	1.9	0.703
Taxes	0.0	1.6	0.0	0.7	0.0	0.4	0.395
Automobile	0.7	1.6	0.0	0.7	0.0	0.6	0.671

When asked how they use poultry such as chickens, ducks and turkeys at the household level, respondents reported that chickens are used as food (soup), and any excess eggs and chicks are sold to cater for other domestic needs. Chickens are also exchanged for goats when a household has accumulated enough birds to move to a higher-value domestic animal. It is clear that chickens are used in good and bad times. As reported by a key informant in Lira district, "Chickens help during good and bad times because they are the easiest [livestock] to use. When we are happy we use chickens, when in sorrow like death we also use chickens, and when the in-laws visit us, one has to slaughter chickens, especially if the in-law is a male." A FGD respondent in Arua believed that it is divine intervention that allows people to keep chickens: "It was God who created chicken for us. We poor cannot manage anything. When you are sick, sell chickens, when you are poor, you sell chickens. It was God who gave us chickens to solve our problems since we are poor."

Study results indicate that being educated to post-secondary level is significantly related to the mean amounts of chickens and eggs produced per year (Table 15); farmers are likely to produce more eggs and chickens if they attained a post-secondary educational level (p-values = 0.037 for eggs and 0.001 for chickens at .05 level of significance).

Table 15 Variance analysis test of average poultry farm output and level of education

	Education level				Sig.
	None	Primary	Secondary	Post-secondary	
Average number of eggs per year	75	618	373	6 411	0.037
Average number of chickens per year	33	38	54	130	0.001
Average number of chicks per year	45	103	90	141	0.242
Average number of ducks per year	39	17	27	16	0.366
Average kg of meat per year	2	3	0	0	0.785
Average number of turkeys per year	2	8	23	12	0.634
Average number of guinea fowls per year	40	6	28	0	0.556

Cultural beliefs, practices and traditions related to domestic birds

Many of the cultural perceptions, practices and traditions associated with poultry may have positive or negative impacts on livelihoods. The majority of these cut across ethnic divisions in Uganda, and the research for this study found that many of them are similar. Respondents reported that many of these perceptions and practices have been carried through the

generations to the present, such as certain cultural rites and ceremonies involving chickens. Some respondents, especially the elderly, report offering chickens to their ancestors for good and bad luck. Sometimes, chickens are slaughtered at the new harvest, to cleanse and appease the ancestors before celebrating a successful planting season, or to drive out evil spirits.

Chickens are also important in traditional ceremonies such as marriage and burials. For marriage ceremonies, chickens are particularly useful for paying the bride price. In communities where cattle is the standard form of payment for the bride price, chickens usually accompany the cattle and are the first item the bride's family demands. For example, among the Basoga (in Jinja), the bridegroom presents a cock to the bride's brother, which acts as a sign that the brother has given his sister to the groom. Among the Lugbara, Jopadhola and Basoga ethnic groups, chickens are used for last funeral rites and marriage ceremonies; when the groom gives goats for the bride price or dowry, a bird (usually a chicken) is first presented to the in-laws. During naming, burial and death rituals, a cock is used to drive away bad spirits.

Chickens are also important in mourning rites, the naming of newborn babies, the transportation of the deceased, and the roofing of houses. Especially in Jinja it was reported that any bird jumping over the corpse while people are mourning the dead is slaughtered immediately. A related practice is the killing of cocks that return home late in the evening or that crow between about 19:00 and 19:30 in the evening, as either of these is taken as a bad omen for the household.

Domestic birds are often used for time management. For example, chickens alert their owners when it is time to get up in the morning. When a household honours a visitor by killing a chicken, the gizzard is presented to the visitor as a sign that a bird from the family's stock was slaughtered in his/her honour, and not purchased. Sacrificing domestic birds or other animals demonstrates how much a family is willing to invest physical capital in social capital, especially in friendship networks.

Owning chickens was also reported as a good thing for a household; a male FGD participant noted, "When they are moving around the home, they are just like flowers." Chicken meat and eggs are perceived as healthy foods, and sick people are usually advised to eat eggs to regain their physical strength. People believe that healthy chicken meat will remain in the body for seven days after being eaten. All these perceptions help to demonstrate the importance that communities attach to chicken raising, which is generally considered a social activity that every family ought to practise. Respondents also reported that families owning chickens are perceived to be able to solve any problem, because the birds can easily be converted into money or physical capital by selling chickens or eggs.

Respondents described chickens as domestic birds and companions at home; when they die their owners are sad. One female respondent in Nyangila village, Arua said, "You know when you have chickens at home, you stay with them as if you are staying with fellow human beings; if they all die, for sure it brings misery on people." This has sometimes affected poultry farming because rural people keep chickens for social rather than commercial purposes, until there is a problem, when domestic birds are the first means of solving the problem to be considered. Other benefits or assets reportedly obtained through poultry farming were manure, friendships, prestige, advice, knowledge of best practices and group formation. In addition, it was reported that a household obtains money, easy meals for visitors, supplements to their diets, and other benefits from poultry farming.

Respondents also indicated that the food crops grown alongside poultry farming include maize, millet, sorghum, cassava, sim sim, beans and groundnuts. This has implications for food security in a household. Poultry farming is affected by food insecurity, as the birds depend on the same food crops that serve as staple foods for humans. Turkeys and chickens

can be viewed as opportunistic birds, enjoying millet drying on tapelines in the courtyards of their owners. When the research team saw that crops grown in homesteads are shared with domestic birds and inquired as to whether the birds were spoiling the millet harvest, the owners replied that the birds would not eat all the grain. The farmers' response might have been quite different in a planting season when grains were scarce or in case of famine. The implication of this is that households are likely to keep chickens not only to obtain financial capital but also as an obligation. Therefore, in a catastrophic outbreak of HPAI or another disease such as NCD, families that depend on poultry to solve their domestic emergencies, are likely to be severely affected.

Hybrid and exotic versus local breed

In most of the rural communities visited, hybrid breeds are not common, except in parts of Jinja district, where respondents reported the existence of crossbreed chickens reared mainly for commercial purposes. This could be because Jinja is semi-urban, and poultry is reared on a commercial basis because of the urban market. Urban areas are also close to service points, such as drug stores, technical (veterinary) services and information centres where advice about good poultry practices is easily obtained. Many people are sceptical about the value of exotic or hybrid breeds because of their susceptibility to disease, while local breeds are considered to have natural immunity as they are adapted to the environment. Local breeds are more resistant to diseases, while exotic poultry requires more intensive care through the provision of houses, constant light and feeding. This is because hybrid chickens are very delicate and vulnerable to shocks. While local breeds feed on local crops, such as millet, maize, rice mash, water, grass and insects, hybrids require more. In addition, local breeds fetch higher prices than hybrids. This implies that there are trade-offs involved in choosing which breeds of domestic birds to keep.

Hybrid chickens are also described negatively because they attract thieves, as they are usually confined in one area, while local breeds are reared in free-range systems and feed themselves. Hybrid breeds require financial resources to which the majority of rural residents do not have easy access. Although exotic breeds lay many eggs, and thus generate far more money than local chickens, the initial capital investment and the intensive care that crossbreeds require discourage many people. One respondent from Kanungu summarized this by saying that, "The exotic birds are very expensive to keep because they need water, constant light, an executive house and are treated like human beings. However, they are good in the way that they lay many eggs; one can sell them for money and grow faster." Another positive attribute of hybrid or crossbreed chickens that rural communities identified is that they do not destroy gardens because they are kept indoors.

Respondents acknowledged that diversification of poultry types increases a household's income-generating opportunities; for example, when many visitors arrive at a household, a turkey can be slaughtered instead of a chicken; when larger sums of money are required, such as for school fees, selling a turkey will generate more cash than a chicken or a pigeon.

Most respondents preferred the taste of chicken meat from local breeds to the "soft" hybrid or crossbreed meat, which was described as tasteless and watery, and which cannot be used in marriage rites. A respondent from Lira said, "Hybrid breeds' eggs cannot hatch even though they look nice and big." There are also preferences regarding different types of poultry, with ducks considered more resistant to diseases than chickens, although chickens multiply faster and are believed to taste better than other birds. Many people would rather keep chickens than ducks, which are considered "dirty" birds. Some communities do not allow the use of birds other than chickens in traditional ceremonies, such as marriage. As a male FGD participant in Tororo explained, "Ducks and turkeys are not used for marriage because of the

belief that if a person gives a duck, the woman will produce children with legs and toes like a duck's, which are not good compared with chickens' that are straight and nice" (men's FGD, Tororo).

Although local poultry meat is rated higher in terms of taste and local acceptability than hybrid or crossbreed meat, local chickens are very expensive (Byarugaba, 2007: 26), implying that farmers probably sell them only for emergencies and keep them for reproduction rather than for commercial purposes.

Poultry diseases

Commonly occurring diseases were reported in several of the areas visited, and respondents identified these by their characteristics. The first of these is NCD (ajoo in Tororo, omuraramu in Kanungu, Kalusu in Jinja, au azo in Arua, and geng in Lira), which is usually deadly and kills all the birds where it strikes. Some chickens with NCD pass watery stools of a green or white colour, others get sores on their beaks, and chicks may cough continuously. Another sign of NCD is when a chicken turns its head and drops dead within a day. NCD is also characterized by the loss of saliva from the mouth, as affected birds have respiratory problems. Birds may also have nervous signs, such as twisting their necks. Most farmers recognize that these symptoms mean that the disease has become an epidemic (key informant interview, Jinja district). NCD was the second most frequent disease, reported by 41.0 percent of respondents, after coccidiosis, reported by 62.4 percent, which was mentioned in all the districts apart from Kanungu, where NCD was particularly prevalent (Table 16).

Other diseases reported, especially in Jinja district, included infectious bronchitis, fowl pox, and gumboro, which is common in young birds of about two weeks of age and is characterized by stiff neck or neck twisting, coughing and a high death rate. Fowl pox is common among chicks of about one month old; it also affects older birds, but they may not die. Affected birds exhibit wounds all over the body, around the eyes and mouth, and on internal organs.

Table 16 Common poultry diseases by district

	Arua	Jinja	Kanungu	Lira	Tororo	Total*
Disease	%	%	%	%	%	
Coccidiosis	86.0	44.4	0	94.0	88.9	(327) 62.4
NCD	13.2	84.1	98.4	3.7	20.6	(215) 41.0
Infectious bronchitis	0	7.9	0	0	0	(5) 1.0
Fowl fox	0	4.8	0	0	0	(2) 0.6
Gumboro	0	3.2	0	0	0	(2) 0.4
Unknown	1.5	4.8	1.6	2.2	6.3	(14) 2.7
Total	(136)	(63)	(128)	(134)	(63)	(524) 100.0

* Numbers in parentheses are frequency counts.

Perceptions about the causes of disease outbreaks

Various explanations were advanced as to the causes of disease outbreaks (Table 18), but the responses from the survey concur with those from KIIs and FGDs, and include:

- Buying infected birds: Sometimes farmers buy infected chickens from their neighbours, leading to disease spread and deaths. Many community members reported this throughout the five districts, attributing it to lack of information and ignorance, especially regarding disease outbreaks in the district or sub-county. Respondents argued that farmers' tendency to buy chickens from elsewhere rather than slaughtering their own also helps spread diseases. After the meat has been eaten, the bones and other body parts are usually thrown away to be picked up by free-range chickens. It was also reported that people sometimes buy sick chickens unknowingly, as farmers often rush to sell all their birds, including infected ones, whenever a disease outbreak is reported, and few buyers scrutinize birds at the market.

- Visiting a family with sick chickens can easily lead to the spread of diseases.
- Change of weather may cause disease outbreak, such as during the dry season when there is too much sun. The dry season was identified as a major cause of NCD, as all reported outbreaks occur during this season.

Disease spread also depends on the number of chickens kept; many chickens kept together may have insufficient space and fresh air. A respondent from Kanungu said, "These diseases for chickens are like airborne diseases. When infected birds from other places pass through our villages, even ours fall sick."

A female respondent said, "I think NCD is brought by wind because if your chicken catches the disease and you eat it, even those of the neighbours will catch the disease. So the wind keeps on spreading the disease and one person infects all the chickens in the sub-county." Drought was the perceived cause of disease for 21.1 percent of respondents, while 17.7 percent reported poor hygiene as the main cause. Other perceived causes included households being too close to each other, airborne diseases, the rainy season and poor immunity.

Table 17 Perceived causes of poultry diseases

Perceived cause	Frequency	Percentage
Drought	126	21.1
Poor hygiene	106	17.7
Households' proximity	85	14.2
Airborne diseases	77	12.9
Seasonal diseases	52	8.7
Rainy season	34	5.7
Pests	3	0.5
Wild animals	1	0.2
Poor immunity	1	0.2
Unknown	113	18.9
Total	598	100

Multiple responses were possible.

Respondents reported that hotels in urban centres gathered chickens from different areas. Chickens are slaughtered and free-range local birds pick up diseases as they wander around for food. The people who eat chicken meat at hotels can also easily transmit the disease.

Free-range production perceived as a threat, as it allows birds, including cocks to move to neighbours' homes and infect other birds when there are sick.

Keeping a large number of birds in an unclean house or environment promotes the spread of diseases. To avoid this, there is need to build well-ventilated poultry houses, to separate young chicks from adult chickens, and to convert chickens to larger domestic animals, such as goats.

When healthy birds are not separated from the sick, including when the remains of a slaughtered sick bird are not disposed of properly, diseases are more likely to spread.

Key informants mentioned the need for public education about the dangers of poultry disease outbreaks through making posters, broadcasting radio messages, strengthening local leaders' knowledge and making veterinary services more accessible to rural farmers. Messages should be about good farming practices that can minimize disease outbreaks. Respondents mentioned the need to motivate local farmers by promoting poultry farming as not only a social but also a commercial activity that can boost household income.

The effects of disease outbreak on livelihoods

Disease outbreaks have many consequences for livelihoods at both the community and individual household levels. Within households, priority requirements change, as the chickens that would have been used to feed visitors or sold for survival are no longer available.

The capital available to farmers is therefore reduced, especially when birds die, and the disease outbreak brings poverty to the household, because there is no physical capital to convert into financial capital. As a female FGD participant in Arua put it, "Chickens can easily be converted into other expensive domestic animals, such as goats or cows, or other household items like a bicycle." Because disease outbreaks affect whole villages, parishes or even sub-counties, it is unlikely that farmers can call on fall-back support from neighbours, relatives and friends. For communities that lie on the Sudan border, the suspected outbreak of avian influenza in the Southern Sudanese capital of Juba, a two-hour drive from the Ugandan border, was particularly negative. The Ugandan government imposed a ban on the movement of poultry products, which stifled people's livelihoods and was implemented without consultation with such stakeholders as farmers, traders and transporters.

Domestic birds are key to people's livelihoods in providing a ready source of income when a household member falls sick. A respondent from Kanungu said, "Chicken diseases always bring a lot of poverty because chickens are stored wealth; people obtain money from eggs, which one can use to buy salt and other household-level needs." A Jinja respondent reported "When a chicken hatches, say, around ten chicks, one may get a goat by selling the chicks." Thus, after losing chickens to disease, many people are likely to resort to selling foodstuffs for money, and eventually the outcome is famine or food insecurity at the household level. This is coupled with lack of essential household requirements, such as salt, soap, paraffin and matches, and may eventually alienate a household from family and friends, who do not receive the expected level of hospitality when they visit. Entertaining visitors is a social and cultural requirement, and a household with no livestock for doing so is derided by other villagers. As a female FGD participant in Lira said, "A person without chickens cannot perform cultural rites and activities, such as celebrating the new harvest with chickens." Table 19 lists the effects of disease outbreaks on households and communities. The results confirm what FGDs and KIIs noted: disease outbreak reduces income (for 79.4 percent of respondents), discourages farmers from starting poultry farming (7.8 percent),makes it difficult to host visitors (5.7 percent), reduces the availability of meat (4.8 percent) and reduces the availability of manure for gardens (0.4 percent).

Table 18 Effects of NCD outbreaks on households and communities

Effect	Frequency	Percentage
Reduced income	447	79.4
Discourages farmers	44	7.8
Difficult to host visitors	32	5.7
Lack meat	27	4.8
No effect	8	1.4
Reduced manure	2	0.4
Hatred of people assumed to have caused the outbreak, especially neighbours	2	0.4
Unknown	1	0.2
Total	563	100

*Multiple responses were possible.

It can easily be concluded that diseases have serious effects on households, as outbreaks occur an average of twice a year for 40.7 percent of respondents, and once a year for 36.1

percent As Table 19 shows, 76.8 percent of respondents reported that disease outbreaks occur once or twice a year.

Table 19 Frequency of disease outbreaks

	Frequency	Percentage	Cumulative percentage
Once a year	187	36.1	36.1
Twice a year	211	40.7	76.8
Three times a year	79	15.3	92.1
Others	41	7.9	100
Total	518	100	

Coping mechanisms for poultry diseases

Farmers take several actions when there is a poultry disease outbreak. Respondents reported obtaining drugs from a private veterinary drug shop, vaccinating (after two months, for example), or using local herbal remedies. Most respondents reported the lack of vaccine as hindering efforts to avoid disease outbreaks. However, when vaccines are available, chickens sometimes die immediately after vaccination, which discourages many people from vaccinating their birds. In addition, vaccinations are carried out away than the homestead, which involves moving chickens from their natural habitat, hence increasing the chances that a healthy bird will catch a disease, or a sick bird will spread disease to other areas. NCD vaccination can be done at home, but the low number of homesteads in each village, the vast areas to be covered, and the limited availability of personnel to help distribute vaccines make this expensive and cumbersome. A male FGD participant in Kanungu reported that sometimes there is not enough vaccine to go round all the birds brought for vaccination. Some poultry farmers reported that they could afford to buy drugs themselves, but most FGD participants reported that they could not and had to ask for assistance from those with vaccines. This raises issues about dose sharing, which can lead to disease resistance when inadequate doses are administered.

Sometimes farmers are asked to wait at the roadside to have their chickens vaccinated, but then nobody turns up to do so. Regarding this, a key informant in Kanungu district reported "Sometimes it is hard to cover all areas …. I thought I would be going there every day…. I even had to form community groups because I cannot move to every home, and it is very tiresome for a person to carry so many birds to the roadside. I could not move to every home. That is why we now want farmers to have groups. I make sure I deliver the vaccine in the village so that it can be taken to every poultry farmer."

Burying dead birds is a common strategy in communities where such information has been disseminated. This helps prevent other birds from contracting the disease. Household interviews on how community members deal with disease outbreaks found that 33.5 percent of respondents sought veterinary advice, 24 percent used local herbs, and 19.2 sold healthy birds and ate the sick birds themselves. Respondents reported increased use of herbal medicines for treating poultry diseases in rural areas. Among the local herbal treatments mentioned were the mixing of leaves from medicinal plant species, such as Capsicum frutescens (red paper or kamulali) and Cannabis sativa (enjaga), Nicotiana tobaccum (taaba), Aloe sp. (lukaka), Vernonia amygadalina (omubirizi) and Tagets mihuta (kawunyira), with neem tree and water. While many participants in the FGDs reported buying medicines from drug shops, respondents in the household survey noted a severe lack of funds for this, and reported using local herbs that are readily available (Table 20).

Table 20 Ways of dealing with disease outbreaks

Response	Frequency	Percentage
Use local herbs	211	33.5
Seek veterinary advice	151	24.0
Sell the healthy and eat the sick birds	121	19.2
Leave sick birds to die	68	10.8
Keep birds indoors	58	9.2
Medicine from veterinarians does not work	10	1.6
Dispose of dead birds in latrines	4	0.6
Kill the entire stock	3	0.5
Unknown	3	0.5
Total	629	100

*Multiple responses were possible.

Research on poultry diseases in Uganda shows that about 80 percent of poultry farmers know how to use medicinal plants to treat poultry diseases (see www.worldpoultry.net). In a 2007 study conducted in Mbale, Rakai and Mbaara districts, Bukenya Ziraba (quoted in http://www.worldpoultry.net/news) of Makerere University Department of Botany reports that many farmers use medicinal plants to treat coughs, diarrhoea, swollen eyes, mites, worms and lice, as well as to prevent NCD and coccidiosis. The majority of farmers simply crush the plant material, add water and administer the concoction orally. These research findings echo what rural farmers reported in this study. Gueye (1999) also discusses the ethnoveterinary treatments practised by poor farmers in African villages to control poultry diseases. Remedies usually involve natural materials that are readily available, as ethnoveterinary treatments are the only option that is affordable.

However, the decision to administer local herbs depends on what the farmer perceives as the causes of the disease, and this perception is not always scientific. This may result in practices that increase the spread of disease or (in cases of self-treatment) kill the entire poultry stock. Lack of information sometimes prevents farmers from taking appropriate action, such as seeking veterinary services. To identify the constraints faced by respondents who kept chicken, a logistic regression was fitted. First, a univariate model was fitted with one variable at a time. Then all those variables with a p-value less than 20 percent were included in the final model. A multivariate model was then fitted, dropping one variable at a time, starting with the one with the highest p-value. The final model revealed that the constraints to chicken keeping were pests and diseases, old age, lack of labour and lack of advice (Tables 21 and 22).

Table 21 Constraints faced by respondents who keep chickens

Constraint	Chi-square	p-value
Pests and diseases	9.74	0.0018
Lack of labour	10.19	0.0014
Old age	14.49	0.0001
Lack of advice	5.33	0.0209

Table 22 Relationship between farm input and chicken rearing

Input	Odds ratio	95% CI		Chi-square	p-value
Labour	2.946	1.712	5.068	15.2362	< 0.0001
Medicine	1.377	0.751	2.527	1.0688	0.3012
Feeds	1.704	1.010	2.876	3.9834	0.0460
Others	1.945	1.003	3.772	3.8716	0.0491

These findings suggest that respondents who kept chickens were 2.9 times more likely to use labour as a poultry farm input, rather than medicine and feeds, compared with those who did not keep chickens. This difference is statistically significant. Other inputs associated with keeping chickens were feeds, iron sheets, cement, electricity and veterinary drugs. Feeds and

other inputs, such as wire mesh and troughs for serving water, are very expensive for poor farmers.

Threats to poultry livelihoods

The following are some of the many threats to poultry livelihoods identified by FGDs and KIIs:

- Inadequate feeds for poultry: When food for humans is scarce, chickens have less access to the food leftovers and residues that they usually eat. Poultry today suffers from an inadequate supply of feed, which explains the increase in free-range poultry farming.
- Conflicts with neighbours when chickens destroy crops, especially maize and beans force farmers to keep their chickens indoors (enclosed), and diseases spread faster when the birds are all kept together. Farmers also de-beak the chickens to stop them from destroying crops. When birds destroy a crop, the owner of the crop usually tells the owner of the birds to tie them up; if she/he refuses, the crop owner may decide to hit or poison the birds. Some respondents reported pride as one of the issues that can lead to conflict between neighbours in a community. Some farmers do not keep their birds under control; as one respondent said, "In most cases, people who have poultry are proud and malicious people because when their birds destroy people's crops; they shamelessly quarrel instead of being apologetic, which is so annoying. They keep quiet when you complain about their chickens and just look at you as a fool."
- Chicken surveillance: It was reported that chickens need surveillance to identify sick birds and isolate them from healthy ones. FGD participants also noted a need for sensitization and training on poultry farming generally in order to recognize different disease symptoms. Currently, people in villages watch what their neighbours do and copy it, regardless of whether the practice is good or bad.

  The same occurs with buying chickens, when farmers see their neighbours' and buy the same type of birds. Their main concern is to generate money without having to care for the birds. This problem is compounded by the lack of advisory services to inform people about best practices for chicken keeping. Farmers are not sure about the causes of disease, so diseases tend to take farmers by surprise.
- Lack of money to buy drugs/medicine for chickens, especially for farmers with more than about 100 birds: The lack of drugs is very risky because every year disease outbreaks kill many birds, resulting in a need to restock.
- The threat of theft and wild animals and birds eating chickens and chicks: Many thieves are people without work, who take advantage of other people's chickens.
- The need to lock birds inside during the planting and early germination period: This often deprives free-range birds of their food source, and may also aid the spread of diseases.
- Lack of materials for constructing chicken houses: As it is difficult to build chicken houses, some households share their own homes with their birds, leading to human-to-bird or bird-to-human spread of diseases, such as influenza. This can have serious consequences when there is an outbreak of HPAI.
- Expensive feeds: For commercial farmers, this reduces the profitability of chicken farming, especially as there is also a lack of sources of assistance, such as for borrowing money.
- Difficulties with marketing poultry products such as eggs and chickens: A respondent in Jinja noted that "The majority of people engage in something without understanding if there is market. A farmer may get yield but doesn't know where to market it, so makes loses." In addition, market opportunities are often lacking.
- Lack of advice: Community members reported the general inefficiency of veterinarians, who are often not available when needed.

This list indicates that there is a serious threat to poultry farming, as reported by the community members in the districts visited.

Institutional networks and support for poultry livelihoods

Respondents were very reluctant to report the institutional arrangements available for dealing with poultry disease outbreaks, arguing that veterinary services are available but officers are not supported. This was one of the threats to poultry livelihoods in almost all the areas visited. There were reports that even when a veterinary officer has been alerted about a problem such as a disease outbreak, he/she may not be able to leave the station or office because there is no transport or travel allowances. It is also difficult for farmers to reach veterinary officers, as there are very few of them and they handle large areas. When a veterinary officer does arrive, she/he may only be able to identify the disease, prescribe drugs the farmer has to purchase and leave. Treating the sick birds may involve additional costs to the farmer for transport.

There is also a marked absence of financial institutions because people operate in situations that are difficult to determine or predict. Existing financial institutions usually support formal business operations that are clearly defined by predictable cost and benefit analysis. Most financial institutions are not aware that for rural farmers, when the prices of feeds increase, profitability drops. The government organizations operating in the districts are the National Agricultural Advisory Services (NAADS) and local governments. The non-governmental organization (NGO) World Vision operates in Lira and Tororo districts, supporting the education and agriculture sectors. World Vision and NAADS programmes have sought to supply chickens, maize seeds and children's education to families that are unable to afford them. However, NAADS programmes target only the members of groups or registered associations, and small and new entrants into poultry farming may not be aware of some of the institutional set-ups available. Some formal institutions concentrate on established farmers, and ignore smaller farmers, who have to fulfil stringent conditions to join and benefit from the institutions.

How small institutional networks help poultry farmers

Respondents reported many factors as being important in facilitating different livelihood activities. These included institutions or institutional set-ups, such as small savings and credit associations (Buka Oguze in Kanungu). Respondents reported that those who wanted to could easily start livelihood activities by obtaining money to buy a hoe or seeds; their village neighbours would not complain about them using the land because more land was always available. However, respondents argued that it was not possible for a farmer to work alone. This encourages community members to form associations or groups, which collect money or other physical items and lend them to their members in turn.

Medium-level organizations, such as the Uganda National Farmers' Association (UNFA), and smaller groups, such as merry-go-round groups or saving and credit cooperatives, form a basis for network relations within a community. Respondents from Jinja were of the view that they had received no help from small institutions because of registration requirements, especially for UNFA, which requires proof of ownership of a piece of land for planting grass (Ngada), which is then surveyed by UNFA officials. This excludes many suitable members who cannot satisfy the requirement owing to low incomes and poverty. Guaranteeing a loan is a major problem, as most villagers do not have the necessary collateral. Where loan facilities are available, most FGD participants commented that interest rates are extremely high, and the loans seem to benefit only the lenders. The costs of feed and transport to reach veterinary and other animal husbandry officers are also prohibitive. Extension workers do not always perform the duties expected of them, and seem not to care much about the plight of poultry farmers.

In the survey, slightly less than half the respondents (48 percent) reported having household members who were involved in formal local associations. These organizations had both male and female members (for 62.9 percent of respondents); only female members (26.9 percent) or only male members (10.7 percent) were members. It was also reported that the majority of these local organizations were formed and financed by members alone. Others were financed by NGOs, community-based organizations (CBOs), central and local government. Most of the associations were registered with the District Community Development Office. Many of the CBOs reported were formed for the purposes of acquiring education, farm inputs, household improvements, health care, transport and marriage. Few respondents (14 percent) reported the existence of specific associations for poultry farmers. Of the 527 respondents, only 25 percent reported having a household member who had received a loan in the previous year. The majority of those obtaining loans got them through informal local organizations, such as Bika Oguze in Kanungu; others used the village bank.

Many reasons were advanced as to why so few community organizations have been set up in the areas visited, including the expectation that many organizations, especially formal and government ones, are about to be established (for 30.8 percent of respondents), existing organizations are ineffective and corrupt (25.2 percent), families do not ask for assistance, or farmers do not know about the organizations in their villages (Table 23). Informal organizations offer mainly savings and credit services to members (for 34.8 percent of respondents), social support, agricultural services, burial arrangements, etc. Most respondents reported that they were members of community organizations (62 percent), and some were members of the organizations' management committees. Obtaining assistance from informal organizations does not require security or collateral, but would-be borrowers need a recommendation from a member.

Table 23 Group and organization dynamics

Why there is no organization in the area	Frequency	Percentage
Expected soon	115	30.8
Ineffective and corrupt	94	25.2
Families do not ask for assistance	50	13.4
Ignorance about existence	48	12.9
No one to connect	35	9.4
Unknown	31	8.3
Total	373	100
Main activity of the organization		
Savings and credit	79	34.8
Crop growing	28	12.3
Social support	26	11.5
Agriculture	23	10.1
Training	22	9.7
Burial arrangements	20	8.8
Others	29	12.8
Total	227	100
Position of the household head in the organization		
Member	147	62.0
Chairperson	24	10.1
Treasurer	21	8.9
Secretary	16	6.8
Adviser	5	2.1
Other	22	9.3
None	2	0.8
Total	237	100

Some people had obtained loans from formal institutions, such as Stanbic Bank, FINCA Uganda, and Centenary Bank. These loans required some form of security for 71 percent of respondents, while for 29 percent they did not require collateral.

The most important revelation, however, was that such loans did not help people to improve their livelihoods (70 percent of respondents). Respondents reported long distances to the offices concerned, high interest rates, inefficiency, complicated bureaucratic procedures, corruption, unreliability, and the costs of ventures as discouraging most would-be beneficiaries. Respondents ranked NGOs and NAADS as the most important organizations in improving livelihood, and central government and members of parliament as the least. Regarding the services provided, respondents ranked income-generating activities, access to credit facilities and skill training as the most important, and marketing and transport as the least. Respondents reported that there were no poultry farming-related services and organizations in their areas, and no animal husbandry officials or veterinary surgeons to provide advice. Among the many reasons advanced for this gap were that officials failed to show up after promising to do so, official were ineffective and corrupt, and farmers had not asked for assistance because they were not aware that such services exist. A few respondents reported that they lacked the connections necessary to reach officials. Government services are therefore inadequate and not easily accessible, and animal husbandry officials at sub-county levels can be counted in name but not in physical presence.

Sources of information on poultry

The study was also interested in finding out what information about poultry farming (farming, breeds, diseases, marketing, etc) rural communities obtained. Table 24 summarizes the proportions of respondents receiving information on various aspects of poultry farming: 37.4 percent had received no information regarding inputs, and 17.6 percent obtained it from the radio; while 34.0 percent had received no information about poultry markets, 30.4 percent got it from friends, and only 5.9 percent obtained it from extension agents, confirming that few extension workers were available to provide vital information about poultry farming.

For disease prevention, 25.2 percent reported local radio stations as a source of information, and 23.5 had received none. Friends and neighbours appear to be an important source of information, mainly through network connections. For disease treatment, 23.5 percent of respondents had never received information, while 21.8 percent got it from the radio. This shows that information dissemination among rural communities in generally lacking. Other sources of information quoted included personal knowledge and initiatives, posters, churches, schools, newspapers, and visits to established poultry farms in the community. About a third of respondents had visited an animal husbandry officer to discuss poultry feeds, diseases, hygiene, housing, breeds and/or fertilizers.

Table 24 Sources of information about poultry farming (percentages of respondents)

Source	Inputs	Markets	Disease prevention	Good practices	Disease treatment
None	37.4	34.0	23.5	32.4	23.5
Radio	17.6	13.1	25.2	18.4	21.8
Friends	15.2	30.4	19.7	13.9	20.3
Extension agent	12.3	5.9	16.3	18.6	18.4
Neighbours	8.3	18.8	16.3	8.0	19.2
Workshop/seminar	7.4	4.6	9.9	9.1	9.1
Local leader	3.4	2.5	7.6	6.1	6.6

When asked to rate the government services currently offered to poultry farmers, 37.8 percent of respondents said that they were non-existent, while about 50 percent rated them as inadequate, confirming what FGDs had reported about government poultry farming interventions. Respondents were asked whether there had been changes in poultry farming,

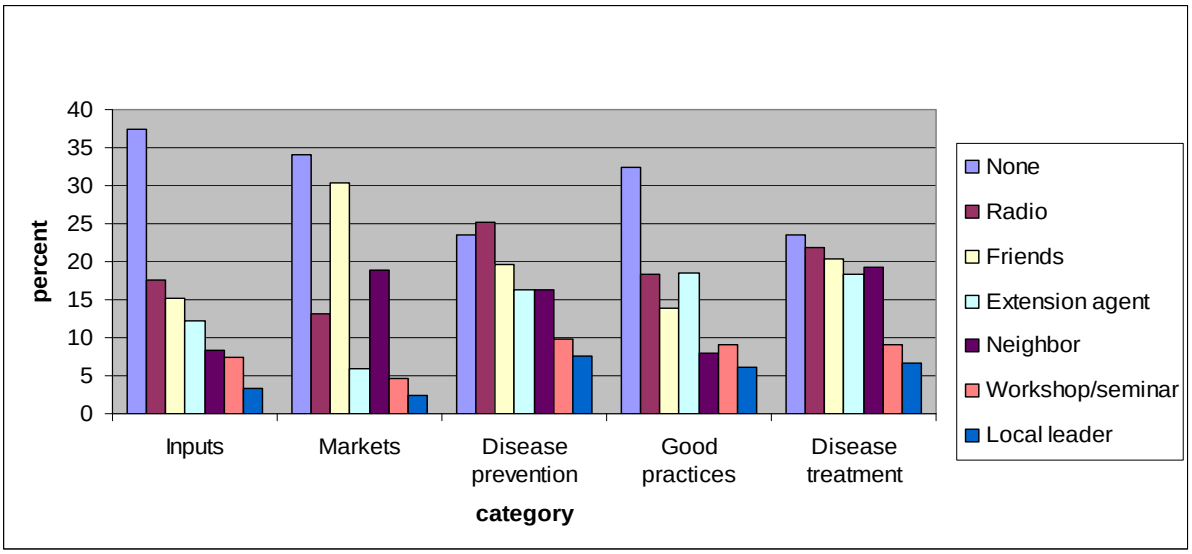
diseases, breeds, marketing and opportunities in their areas (Table 25). Lacking or inadequate information about poultry farming (feeds, treatment and breeds) may explain the low subsistence level reported in all districts.

Table 25 Changes in poultry farming in the last ten years

Assessment	Farming	Diseases	Breeds	Marketing	Opportunities
Increase	30.0	64.9	28.8	82.2	44.0
No change	14.2	20.5	54.1	3.8	17.5
Decrease	52.9	12.9	11.0	8.2	28.7
Other	2.5	1.5	6.1	4.0	8.0

Figure 4 shows that farmers are provided with almost no information on essential aspects of poultry farming, such as inputs, markets, prevention and treatment of diseases and good farming practices. Farmers are more likely to obtain information about poultry marketing from friends and neighbours than from the radio or extension agents. This has policy implications for reaching rural farmers via official communication channels. Extension workers provide farmers with more information on good farming practices than on markets and farm inputs.

Figure 4 Sources of information on poultry farming



Attitudes about and perceptions of poultry breeds and genetics

The study also inquired about poultry breeds and what respondents felt about them. Many respondents recognized that the different breeds included both local varieties and exotic or hybrid breeds. A key informant in Jinja district appreciated the value of exotic breeds, and had been farming them for more than 20 years: "From poultry farming, I have been able to educate most of my children, including one now teaching at the university." During interviews, various reasons were advanced as to why homesteads kept different varieties, with most respondents reporting that it was because farmers wanted to diversify their incomes (61.3 percent) and not rely on only one type. This shows how local communities understand the importance of variety. Table 26 summarizes the responses from household interviews. Respondents also acknowledged that ducks are more resistant to diseases, especially NCD, than chickens.

Table 26 Reasons for keeping several varieties of birds

Reasons	Frequency	Percentage
Diversify income sources	284	61.3
Ducks resistant to NCD	141	36.4
Can afford them	19	4.2
Unknown	15	2.8
For prestige	12	4.0
Constant income	11	2.1
For food	3	1.7
For visitors' consumption	2	0.4
For cultural practice	2	0.8

Responses from both FGDs and household interviews also indicated that changes are taking place, especially the introduction of new breeds. In Tororo, for example, a NAADS programme introduced new cocks that were bred in Serere Agricultural Research Institute in Soroti and are slowly transforming the local breeds into a hybrid variety that is resistant to diseases. Most respondents were of the view that the offspring of local cockerels and local chickens was more likely to survive in difficult conditions. The most common breeds reported in household interviews were broilers (in all districts), exotic and Belgium breeds (in Kanungu district). The broiler is a variety for laying eggs, which most respondents had heard of.

Among the positive perceptions about changes in breeds were that new breeds are resistant to diseases and multiply faster than local breeds (for 24.2 percent of respondents), are beautiful and have good (soft) meat. The negative perceptions reported were that they are prone to being attacked by wild birds and animals because they cannot run easily (56.1 percent), destroy farm crops (flowering beans), eat a lot (housing and treatment), and are expensive to maintain as they require care.

Respondents argued that ducks are resistant to diseases, have good meat, are able to feed themselves, and are easy to keep. However, ducks were also reported to be very dirty (even taking food from cooking pots in Jinja), to destroy crops, especially those grown around the homestead, to be less marketable, as very few people buy them, and to be affected by heavy rains. Respondents reported that turkeys fetch more income than any other domesticated bird, are resistant to diseases, are useful for security, provide a decorative display, and have good meat. However, turkeys also destroy plants, need a lot of care, have high mortality rates among young chicks, are slow to multiply, and are very expensive to buy. Crossbreed chickens were reported to lay more eggs than local chickens, and selling the eggs helps households to reduce poverty. New breeds are expensive to maintain and have high mortality (Kyomugasho, 2008; Byarugaba, 2007; Gueye, 2001). Local chickens are cheap to buy and maintain and less susceptible to diseases than exotic breeds.

The majority of respondents also reported a general reduction in the productivity of the birds they kept in their homesteads because of outbreaks of different diseases, poor farming techniques, insecurity and increased predators.

The study tried to ascertain which factors may encourage increased poultry farming. Respondents mentioned the prices of birds, availability of good feeds, increased awareness among farmers, and changes in breeds. Respondents were emphatic that the factors that can reduce poultry farming include diseases, pests and predators, drought, and high prices of drugs and vaccines.

Gender and poultry farming

Gender issues are a very important factor in poultry farming, and can either enhance good farming practices or slow down innovations because of the different gender perceptions held at the household and community levels. Many traditional poultry beliefs and practices, especially regarding chickens, have negatively affected women and girls. Chickens are used in most

traditional ceremonies, such as weddings and bereavement ceremonies, where both men and women participate, but FGDs reported that women shouldered about 75 percent of household poultry farming activities, including looking after the chickens, ensuring that all the birds return in the evening, and catering for visitors when a bird has to be slaughtered. Until recently, women did most of the work of looking after poultry, but were traditionally not permitted to eat or sell chickens. Nowadays, however, there is increased recognition of women's roles, especially their participation in the management and marketing of poultry products. A male respondent in Jinja summarized women's role as "Practically it is the woman to be involved in the management of poultry, while the man provides an administrative role. Women have rights and ownership of the poultry farming business. They have the right; if a woman sat at the table and decided to do something and it comes out right, then the woman has actively participated and will share the profits. She can suggest that we increase the number of chickens, and we do so.

The person who will gain most is the wife. Because if a visitor comes and there is no sugar she will not phone her husband but will obtain the resources from the poultry available." Children also play a big role in poultry farming, by cutting grass, fetching water, gathering chicken feeds, washing troughs, scaring away predators, etc. Therefore, for any poultry programme to succeed, women and children must be involved.

Women and children play key roles in chickens' day-to-day management, accounting for 90 percent of this, compared with men's 10 percent (Byarugaba, 2007). Supplementary feeding is provided from the food leftovers of household meals, although current food insecurity means that such food is rarely available. KII data confirmed that women and children provide between 75 and 90 percent of the labour, and men about 10 percent.

There were mixed feelings among female respondents about their level of control of poultry farming in households. Women FGD participants felt that they were doing family work whose proceeds helped the entire family, rather than regarding the tending of the household's poultry farm as women's work. There were different responses regarding who controls what in poultry farming. Women reported that their parents had given them most of the chickens they now control. Over the years, such chickens reproduce and are exchanged or converted into larger animals such as goats or cows (see Gueye, 2001 on such conversions in Senegal). However, men often prevent women from 'converting' their poultry into other domestic animals, even though they do not own the birds themselves. While women look after domestic birds, men were reported to take away domestic birds without consultation with their owners – the women. Women respondents also reported that men had developed another way of denying women access to and control over poultry incomes by failing to contribute to the household's upkeep, thus transferring this burden to women. Men view women as able to assume responsibility for the household's upkeep from their poultry income.

In this way, men are increasingly controlling women's income indirectly, by not contributing to household expenses and leaving women to provide everything from the incomes they generate from the sale of poultry products. This is seen as an increased burden for women, which strains their efforts to be self-sustaining and reduces their capacity to make independent decisions. A female FGD participant in Tororo said, "When the men learned that women don't want to be bothered, they keep quiet. 'The home is yours, the children are yours', so when children are sent home for school fees, the men keep quiet. Men simply say 'Go to your mother'. Therefore, men are still controlling us. They've only changed their tactics!" A male FGD respondent in Jinja said, "Women take care of these chickens and chickens are profitable. Sometimes there are small things, which come up, and the man is not around. If there is need, she can sell and solve the problem, like when a child is sick. So when the man comes back she can tell him that I lost someone and I didn't have transport so I sold the red hen and it helped me, solved my problems of transport. Chickens have also saved us in

many ways as men. Women have many problems and yet men take long to buy them items like knickers, petticoats, Vaseline. So you can find her having them and she tells you that she sold a hen and purchased these things. So they are empowered on the money from chickens."

Most of the male respondents were emphatic about who controls and manages poultry in a household. For example, one respondent said, "Even a long time ago women had the right to control, own, sell and use the proceeds. Because as we have said earlier, at home, you can start with a chicken, then you get a goat and a cow; so a woman had all the right to control poultry knowing that eventually my child will benefit from this chicken. Therefore even when there is a visitor, you call your wife and discuss how to look after the visitor. So let us not say that a woman doesn't control chickens." A male FGD participant in Tororo added, "I also refute the fellow who said that women don't control chickens. He has collectively put us together, which is not true. He should talk on his behalf not the whole area. Even if you have chickens at home that you call yours, you can't take away chickens from the woman who is keeping them without informing her. So for everything that belongs to a home, a woman has every right to own them and control them."

In Kanungu, women FGD participants reported the changes that have taken place over the years to perceptions of disabled members of the community. A female FGD participant reported, "Originally, the disabled members of society used not to keep chickens. People used to look at them as cursed. Therefore, they would look at them as useless. However, nowadays, the disabled are taken like any other human being. They also work to survive. When they get chickens, they also rear them."

Regarding how much women get from poultry farming compared with men, male respondents were of the view that chickens help women more, as a man's plans are always on a larger scale than that of the limited incomes from poultry products. However, women reported that men regard most of their needs – such as for salt, soap or paraffin – as negligible or minor.

The majority of respondents claimed that women can eat poultry products such as eggs and chicken meat, but almost all male respondents argued that not all parts of the chicken are gender-neutral. For example, the gizzard must be given to a man or the visitor for whom the bird was slaughtered (see Kyomugisha, 2008 on a men's song about women eating chicken). The following conversation during a male FGD in Arua summarizes cultural beliefs and practices:

Resp. 1: Yes, these days they eat it… Yes.
Resp. 2: Today I can give even the gizzard to my wife.
Resp. 3: In fact, the most important part is the gizzard; the gizzard has to be given to the man.
Resp. 4: Yes, the woman has to first give it to the man; it will be the man's decision whether to give it to her.
Resp. 5: In fact that part must never get lost, the "gear box" [laughter]. If it gets lost, it's bad… the woman may have to go to her parents home to bring a whole chicken in replacement…it is a cultural law…. [laughter].
Resp. 6: Actually, there was a scenario is Terego where a man arrived home to find a visiting sister-in-law with his wife eating chicken sauce prepared in his home. He hurried to see what was left for him and came out furious, picked a club and hit his wife dead…. [lamentation in chorus]

This conversation sends very serious signals about what can happen when cultural rites, practices and belief systems are interfered with, regardless of whether they promote gender imbalances or not. Research elsewhere indicates that the suppression of women and girls through poultry-related practices is not new in many African communities. According to Gueye (2001), poultry is the most numerous livestock species in Africa, with 85 percent of rural families in sub-Saharan Africa keeping at least one avian species. However, although the majority of homesteads keep poultry, there is a general "gender blindness" among society and policy-makers in recognizing women's unique role in poultry production and dispelling the negative perceptions of their poultry consumption. Gueye's research urges for recognition of

women's specific role, as poultry is seen as an integral part of overall African culture. However, it is important to promote poultry production with careful consideration of the specific cultural set-up in the society concerned. Thus, the training of both women and men about poultry has to be done carefully.

The following are some of the other cultural aspects related to poultry reported by women respondents in the study:

- Chicken meat that has been boiled without frying will remain in the body for seven days after it is eaten.
- Formerly, among the ethnic group in districts visited, women were not allowed to eat chicken. Women would keep birds at home for the good of their households, but would not participate in eating them.
- The Jopadhola use chickens as an offering and at naming of children ceremonies, when they give two chickens names and throw them on to the top of the house; the bird that remains there the longest is the one whose name is given to the child. Chickens must be slaughtered before celebrating a new harvest. During marriage, a cock must accompany the cattle given as bride price, or the person is not accepted (female FGD in Tororo).
- Whenever a newly married girl goes to her parents' home she returns with a chicken and millet flour to her husbands' parents. She then cooks this food and gives it to her father-in-law. After a girl has married and given birth, she goes home and her family gives her a chicken for her child and one for her husband, who is supposed to eat all of his chicken himself. Alternatively, after a recently married girl gives birth to a child, her parents come to her home with chicken and cook it at her home. When they eat this meal they sing "Way Nyath Ocharo Kwon" (female FGD in Tororo). This celebration is called Minyure. Chicken is also involved in Mikyari, when the girl's parents bring food as goods for the newborn. They cook various sauces using peas, chicken and millet. They then put the mother and child at the door and the child's aunts come with the stick used for mixing the pea sauce and start dancing around the house singing "Way nyathi Ochamo Kwon apipili". As they dance, they kick at the young mother at the door.
- In Jinja, chickens have a cultural role, especially birds with tattered feathers, which are known locally as "ensesele". When a household possesses an ensesele bird, traditional healers will approach the family, because it is used to heal many illnesses. Among its many perceived powers are that of ensuring that lightening can destroy a neighbour's homestead, but not that of the household that possesses the "ensesele" chicken. The dove is another culturally important bird.

Conclusions and policy recommendations

Conclusions- Importance of poultry

The study found that most rural households keep poultry on a smallholder production rather than a commercial basis. The majority of these rural farmers are women, as men usually leave poultry farming to women and children because of the perception that it is a minor activity that is unworthy of men's efforts. This implies that women play a significant role in poultry keeping, which contributes to household food security and the well-being of children. Domestic birds are key to people's livelihoods because when a member of the household falls sick, chickens are the first items to be sold to obtain money to pay for hospital and medical bills. Poultry is easy to sell, and provides a ready source of income for farmers to use when needed, which is vital in the livelihoods of people in Uganda's rural areas. Although many people in rural areas depend on crop production as their major source of income, other important survival strategies

practised are animal husbandry, especially poultry production, rural employment and petty trade.

Local poultry breeds are preferred because they are resistant to diseases and adaptive to the environment. Thus, in poultry interventions, preference would be given to local birds, except in urban areas where hybrid birds are common. Several factors explain why poultry is not a business in many areas, including few birds, diseases, lack of capital to finance commercial poultry production and poor breeds.

Notable changes have taken place among the communities studied, especially regarding the constant disease outbreaks that lead to reduced chicken numbers, thus affecting livelihood patterns. The study noted that people's livelihoods are now poorer because of NCD outbreaks, making it difficult for families to obtain books for schoolchildren. There is therefore need to provide NCD vaccines as a poultry intervention. Poultry diseases have increased in the last ten years. Among the reasons given were that households are now closer to each other; there are more outbreaks of diseases, including new diseases; and veterinary services are absent, while rural subsistence farmers cannot afford private services.

Poultry farming opportunities

There are notable opportunities for poultry to flourish in many rural areas. This is because of the development of trading centres with high demand for poultry products, increased awareness of the need to consume poultry products as a source of protein, and better access to drugs from numerous drug stores. Those reporting decreased opportunities suggested the reasons for this were increased disease outbreaks, lack of awareness about the existence of opportunities, land shortage, and the existence of local breeds that are easy to look after, so farmers are less ready to adopt new practices or breeds.

Informal networks

Informal local community organizations help provide access to loan facilities. Through friendship and neighbourhood networks, rural people have learned many things related to poultry farming, such as the importance of vaccinating domestic birds; the dangers of sharing their homes with their domestic birds, particularly chickens, which brings the risk of easy disease transference from birds to humans and vice versa; and the importance of raising different breeds. Survey respondents did not mention any poultry farming interventions by the government. This calls for planning and budgeting processes to include the poultry sector in government programmes, as poultry is an important activity for many rural residents.

There are marketing opportunities for poultry products, because many farmers are close to markets and there is high demand for local poultry products such as eggs and meat, especially during the festive seasons. However, the study found that few people rear ducks, which makes them expensive and not readily available in rural areas. The majority of rural farmers sell their poultry products to local markets and hotels. Study respondents reported that low supply has increase the demand – and hence the marketing opportunities – for poultry products.

Most people keep chicken as a source of food. Others view poultry as an asset that can easily be transformed into long-term family possessions or used for emergency expenditures, such as school fees and children's clothing. Chickens are exchanged for goats when the household has accumulated enough birds to move to higher-value domestic animals.

Cultural beliefs and practices related to poultry

Poultry has cultural significance within Ugandan livelihoods, and this should be considered in any potential intervention strategy. Domestic birds, especially chickens, are an important part

of people's cultures, especially for marriage, burial and the naming of children. Chickens are considered a social bird or companion that every family ought to own.

Poultry diseases

The study noted that people have knowledge about poultry diseases and how they are spread, including through buying infected birds, visiting a family with sick chickens, the presence of hotels in urban centres, and the practice of free-range poultry farming systems. However, there is need for public education on the dangers of poultry disease outbreaks and the good practices that can minimize their effects, through posters, radio messages, information for local leaders, and more accessible veterinary services for rural farmers. Respondents mentioned the need to motivate local farmers so that they view poultry farming as not only a social activity, but also a commercial one that can boast household incomes.

Women and poultry farming

Gender is an important factor in poultry farming. Many traditional beliefs and practices related to poultry, especially chickens, are detrimental to women and girls. Female respondents had mixed feelings about their level of control over poultry farming in their households. Women reported that they felt their poultry activities were family work, which generates proceeds to help the entire family, rather than women's work. However, women also reported that men had developed another method of denying women control over poultry incomes, by failing to contribute to the household's upkeep and transferring this burden on to women who, the men claim, can now support the household with the income from poultry.

Recommendations

Given the severity of disease outbreaks and their impacts on people's livelihoods and poultry, the following recommendations are made.

Interventions in poultry livelihoods in Uganda

To enhance the already important role of poultry in people's livelihoods in Uganda, pilot interventions should be implemented and adapted to the different situations in different regions of the country. For example, poultry livelihood pilot projects in northern districts of Uganda would have to take into account this region's high dependency on poultry livelihoods and the more than 20 years of armed conflict that it has suffered. For an intervention to succeed, it has to be mindful of people's cultural attachment to poultry.

Public information and education programmes on poultry production

To avoid catastrophe for poor populations, the concerned authorities should focus on disseminating information about disease outbreaks and causes, their prevention and control, including how to obtain veterinary services, and the risks of consuming sick birds, particularly in an HPAI outbreak, when the risk of transmitting the disease to humans is high. This includes enforcing safe and risk-free ways of transporting and slaughtering birds, and disposing of poultry waste.

Institutional reform

Government should widen its focus on formal institutional set-ups, such as the agriculture and health line ministries charged with fighting disease outbreaks, and should include informal institutions, such as village community organizations in spreading its message. The information disseminated should be about not only diseases but also the importance of poultry

in poverty reduction strategies. There is need to support informal institutions, such as social capital groups, rotating and savings and credit groups and poultry associations, as they can

reach many farmers that even radio messages cannot. This makes it far easier to transfer essential information about poultry production, and it is easier to manage groups than scattered individual farmers. Government should revamp its formal institutions, especially the veterinary services that handle vaccination, production, breeding, disease control, etc.

Bringing the poultry sector into the forefront of national poverty reduction strategies

Although it is an important part of people's livelihoods, the poultry sector has not featured prominently in the government's priority programmes. For the sector to play its role effectively, it should be incorporated into the National Development Plan, and the sector investment plan of the Ministry of Agriculture, Animal Industry and Fisheries. Support should include the provision of soft loans or seed funds through the Prosperity for All Programme, or the local Bona baggagawale.

Increased investment in research and development

There is need to introduce a multi-disciplinary approach to research the role of poultry in people's livelihoods. With increased research funding, new and different ways of approaching poultry might be developed. University curricula should also be revised to include specialized training in poultry for both veterinary and agricultural scientists. Certificate courses could provide vocational training to enhance the skills of both farmers and scientists, including social and behavioural scientists.

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Annexes

Annex I Livestock numbers per household, by district

District	Number of respondents	Label	Min.	Lower quartile	Median	Upper quartile	Max.	Range
Arua	136	Ducks	1	2	4	8	20	19
		Horses						
		Local cattle	1	2	3	5	10	9
		Hybrid cattle	2	2	2	2	2	0
		Goats	1	2	4	6	30	29
		Pigs	1	1	2	4	15	14
		Sheep	1	2	3	6	25	24
		Chickens	1	2	5	12	124	123
		Turkeys	2	2	2	35	5	3
		Oxen						
		Guinea fowls	2	2	3	4	4	2
Jinja	64	Ducks						
		Horses						
		Local cattle	1	2	2	4	20	19
		Hybrid cattle	1	1	15	2	10	9
		Goats	1	2	4	5	8	7
		Pigs	2	2	4	7	15	13
		Sheep	1	2	2	3	3	2
		Chickens	1	5	10	22	999	998
		Turkeys	3	4	6	135	20	17
		Oxen						
		Guinea fowls						
Kanungu	128	Ducks	1	15	3	5	10	9
		Horses						
		Local cattle	1	2	3	6	21	20
		Hybrid cattle	2	2	3	4	4	2
		Goats	1	2	3	5	15	14
		Pigs	1	1	2	2	6	5
		Sheep	1	1	1	2	2	1
		Chickens	1	2	5	9	40	39
		Turkeys	2	2	2	2	2	0
		Oxen						
		Guinea fowls						
Lira	135	Ducks	1	2	25	4	30	29
		Horses						
		Local cattle	1	2	2	4	30	29
		Hybrid cattle	1	1	15	2	2	1
		Goats	1	2	2	4	13	12
		Pigs	1	1	1	2	13	12
		Sheep	1	1	2	6	9	8
		Chickens	1	4	7	12	76	75
		Turkeys	9	12	165	39	60	51
		Oxen	1	2	2	2	4	3
		Guinea fowls	2	2	3	7	75	73
Tororo	64	Ducks	1	1	25	4	11	10
		Horses						
		Local cattle	1	2	3	45	19	18
		Hybrid cattle	1	1	3	5	5	4
		Goats	1	2	3	5	32	31
		Pigs	1	1	1	3	15	14
		Sheep	1	2	2	4	140	139
		Chickens	1	2	55	14	100	99
		Turkeys	1	1	3	5	8	7
		Oxen	1	2	4	4	6	5
		Guinea fowls	1	1	3	3	4	3

Annex II Respondents' reasons for rating well-being

Explain very high well-being

- Have enough food
- Have a job
- Farming source if income
- Good transport
- No difficulties
- High incomes

Explain high well-being

- Have enough food
- Have a job
- No difficulties
- Have livestock
- Have permanent house
- Able to pay fees
- Have enough land
- Are educated
- Have a job
- Struggle for necessities
- Can hire labour
- High incomes
- No source of income

Explain moderate well-being

- Have enough food
- Have a job
- Struggle for necessities
- Farming source of income
- Have enough land
- Have permanent house
- See others who are poorer
- Able to pay fees
- Have livestock
- Have a job
- Depend on season
- Have limited land
- Are educated
- Old age
- Family members died
- Sickness
- Not educated
- No source of income

Explain low well-being

- Struggle for necessities
- Not educated
- Have limited land
- Family members died
- No source of income
- Have enough food
- Old age
- Have bad house
- Farming source of income

Explain very low well-being

- Struggle for necessities
- Old age
- Have limited land
- Sickness
- Not educated
- No source of income
- Have bad house

Annex III Indicators used to rate well-being in relation to the rest of the community

Indicator for well-being	Frequency	Percentage
Feed family	339	64.3
Grow food	306	58.1
Pay fees	207	39.3
Pay medical expenses	199	37.8
Size of landholding	185	35.1
Family size	152	28.8
Own household assets	108	20.5
Good house	103	19.5
Physical appearance	93	17.6
Dependants	71	13.5
Others	63	12.0
Personal means of transport	52	9.9
Savings	30	5.7
Taxes	4	0.8

Annex IV Constraints to livelihood activities faced by respondents

Constraints	Frequency	Percentage
Pests and diseases	338	64.1
Lack of capital	297	56.4
Poor soils	297	56.4
Drought	228	43.3
Seasonal changes	184	34.9
Price fluctuations	137	26.0
Lack of labour	134	25.4
Theft	114	21.6
Lack markets	79	15.0
Old age	68	12.9
High transport costs	63	12.0
Diminished resources	58	11.0
Others	47	8.9
Lack advice	41	7.8
Too much rain	28	5.3
Floods	23	4.4
Corruption	17	3.2
Poor health	13	2.5
High taxes	7	1.3