

RURAL ECONOMY

**Women and Agroforestry: A Human Ecology Approach to
Understanding The Needs and Priorities of Women Farmers
in Africa**

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Abstract

This study examined rural Ugandan women's lives to discover reasons why they may or may not practice agroforestry. These women are responsible for the triple roles of reproduction, production and community maintenance work, all carried out within the context of a gendered social environment. From the perspective of the social manifestations of gender, six key factors were identified. The findings were used to create a theoretical model of the interaction between rural women's lives and agroforestry systems. The model shows that agroforestry is not only a biophysical farming system; There is a human component in that interacts with other components to determine the success or failure of an agroforestry initiative. The model can be used to identify and understand the human component of the agroforestry system on an individual and community level.

Key Words: women in development, agroforestry programs, human ecology, women and work

Many communities in southern nations are involved in or depend on some form of agroforestry for subsistence and income, either through intentional cultivation, or supplementing agricultural production with materials gathered from woodlands and forests. Forests may provide food, fodder, fuel wood, craft and weaving materials, medicines, natural crop fertilizers, and canopy shelter for people and livestock. These needs, coupled with increasing population pressures on resources and competitive commercial production have resulted in mass deforestation, soil erosion and general ecologic imbalance. In an effort to combat these problems, development programs hold much hope for reforestation and agroforestry programs (Flora and Santos, 1988; Das, 1989).

Agroforestry, as an approach to reversing environmental degradation, is particularly favourable due to its holistic approach to land use problems. Agroforestry initiatives in the tropics have successfully intensified land use and increased the human carrying capacity of land and the resources provided by agroforestry aid in decreasing the pressures on natural forests, thereby helping to conserve natural woodlands (Maydell, 1985). Since agroforestry can be practised in gardens and around homesteads, and fuel wood sources can be integrated with agricultural production, these programs are particularly promising for poor rural communities heavily populated by women (Dankelman and Davidson, 1988).

In many African cultures, women's responsibilities include production and preparation of food for the family (Sorenson, 1990). Usually, women make use of the non-commercial and indirect benefits of agroforestry plots; however, with the economic crisis found in many southern nations, and the migration of men from rural to urban areas to find paid work, women also take over the commercial agroforestry work done by men (Fortmann and Rocheleau, 1985). A study

by Watson (1994) indicates that in some parts of Africa women may hold different values and preferences for tree species and use than do men. Not only are certain trees considered men's or women's trees, but different parts of the same tree may be gender specific in use. Thus, women have strong interests in agroforestry programs and their knowledge and beliefs pertaining to such matters are important determinants in the success or failure of an agroforestry crop. As Woodley (1991) aptly states, local ecosystems are best known by those who depend on them.

Studies that address the human dimensions of agroforestry frequently focus on documenting the use of agroforestry crops by indigenous peoples, or the impact of introduced technologies on the local socio-cultural and economic systems (Blair and Olpadwala, 1988; Wilson, 1985). Flora and Santos (1988) state that much of the farming systems research in developing nations tend to focus on systems of land ownership and the social relations of labour, thus linking the division of labour to gender and economics. Accordingly, the definite nature of women's involvement in farming systems is difficult to assess and consequently is undervalued. The past two decades have seen an increasing number of women in development and gender studies relating to agroforestry and other natural resource development initiatives. However, several scholars have expressed skepticism as to the efficacy of these studies in speaking to economists and development planners in a meaningful way (for examples see Moser, 1993; Buvinic, 1990; Flora and Santos, 1988). Acknowledging the challenges of developing successful and appropriate agroforestry programs, Izac (1994) notes that:

[successful programs require] that scientists develop a holistic vision involving economic viability, particularly in relation to the productive capacities of land, environmental protection and conservation, and the provision of an acceptable level of human equity and quality of life for the land-occupiers. The aspirations of both the individual farmer (e.g., decreasing poverty, increasing food production and income) and those of the society at large (e.g., managing resources sustainably, conserving

biodiversity, combatting deforestation) must be met by agroforestry interventions.
(p.1)

There is no doubt that there is a growing awareness of the importance of social and gender issues in economic and development communities. What is needed is an analytical tool for holistically understanding the lives of women farmers and all the factors influencing production behaviours. Moser (1989) has provided one such tool; the triple roles framework. She sees these three areas of women's work as reproductive, productive and community. Many of these responsibilities are considered 'natural' and 'women's work', and therefore are undervalued and invisible. A second tool, that used in this paper, is one model based on human ecological theory (HET). HET has been used as a theoretical framework for understanding farming systems and households in Africa (Clay and Magnani, 1987; Engberg et al., 1994). HET can also be used to examine *individual* women farmer's lives within the context of community level factors, thus adding an extra dimension of analysis. A careful examination of women's roles at the community and individual levels provides the necessary information from which to assess interests, needs, and barriers in agroforestry production.

Utilizing data collected in Kabale, Uganda this paper presents six general themes that have an influence on the farming behaviours of women farmers in Kabale District. One study respondent, Mauda, is then placed into an HET framework to identify and assess the location and degree of influence of the generalized themes on her particular priorities and behaviours. The concluding section discusses the implications of the model for agroforestry planning and development in southern nations. To achieve a context for the following study, a description of the study site, Kabale District, is presented below.

Kabale District, Uganda

Kabale District lies in the extreme southwest corner of Uganda, in the foothills of the Virunga Mountain chain. It is a rolling, mountainous region of lush, green vegetation, with annual rainfall averages of 1000 to 1500 mm. The current district spans approximately 1, 827 square kilometres of land, of which 1, 680 square kilometres are arable. The treeless hillsides are a patchwork of small, terraced plots, used primarily for subsistence production. Many of the plots are on slopes as steep as 45 degrees, and all agricultural inputs must be carried up and down the hill. The staple crop grown in the district is sorghum, and other main crops include sweet potatoes, Irish potatoes, climbing beans, peas and maize (Kabale Department of Lands and Survey, n/d). Plantain bananas and vegetables are often grown together in household gardens.

Demographics

The population density of the district is estimated at 246.1 persons per square kilometre (Statistics Department, Uganda Ministry of Finance and Economic Planning, 1992). According to the 1991 housing and population census, the total population for Kabale District was 417, 218 persons. Of these, 204, 271 are rural females. The rural females account for 49 percent of the total rural population. The population pyramid for the district is very broad based, with 59 percent of the female population between 0 and 19 years of age. Thirty three percent of households are female headed, and the average family size is 5.0 persons, with an average birth rate of 6.5 children per woman.

Eighty five percent of households in the district are engaged in full-time agriculture. Of this segment, 84.6% are dependent on subsistence agriculture as the primary source of livelihood (Kabale Department of Lands and Survey, n/d). This figure is an aggregated estimate. Since *Bakiga* women's cultural role includes producing food for the family, the figure for women is

likely higher.

Cultural Context

The dominant cultural group in the area are the *Bakiga*. The *Bakiga* are a Bantu group, thought to have originated from what is present day Rwanda (Nzita and Mbagu-Niwampa, 1995; Purseglove, 1946). The *Bakiga* are a polygamous society. In the past, the number of wives any man could have was only limited by the number of wives he could afford (Kigula, 1993). The basic social unit was the extended family, thus the *Bakiga* highly valued a large family for purposes of security of the lives and property of its members. The practice of polygamy still occurs, but is becoming much less common due to the influence of Christian religions, westernization, and lack of land and resources.

Bakiga women are the caregivers of their society, and as such, are responsible for the care and upbringing of the family, including food production. In contemporary times, the responsibility for generating school fees often falls on the women. In Kabale District, 60% of rural women are illiterate (compared with 40% of the rural men). As one may expect, the percentage of illiteracy increases with age. For the 10-19 age cohort, 47% are illiterate. The 20-39 age group are 54% illiterate, while the 40 to 64 bracket are 87% illiterate. The largest group of illiterate women are the 65 and older cohort, with a 98% illiteracy rate (compared to 82% for males of the same age group) (Ministry of Finance and Economic Planning, Uganda, 1992) .

Study Design

Qualitative data were collected over a period of six months, in which two separate interview phases were implemented. The first phase involved in-depth, open ended interviews with 32 women farmers. These women were selected through discussions with a research

assistant (who was also a village local) and snowball sampling through other interview respondents. The second phase involved the collection of detailed life and work histories from five respondents willing and able to participate in a series of interviews. The women chosen to participate in the life history exercises were considered representative of most women subsistence farmers in the area and were characteristic of the two lowest socio-economic categories of people in the village¹. These interviews took place in the women's home, their fields, at the market, and during their women's group meeting (if she was a member). This type of detailed data was collected in order to provide context and individual reality to the generalized community level themes identified during the first round of interviews.

A number of supplementary data collection methods were used in this approach in order to produce a holistic profile of individuals and households in the study area, including non-participant observation, open ended and focused interviewing, farm walks and life history interviews. Content analysis of available documents and a review of the secondary data were also valuable sources of information. The interview transcripts were content analysed first to identify the tasks and responsibilities that comprised the women's triple roles. Then, general themes that operate to impact upon or influence the farming behaviour of the women were delineated. Finally, the detailed histories of the five women were used to generate realistic examples of how these themes affect individual women in their daily lives.

The interviews were conducted in the village of Butobere. The 1991 population of

¹ In previous research, Guinand (1995) had women farmers from Kabale District villages complete a wealth ranking exercise. The exercise resulted in five socio-economic categories, along with associated material wealth and asset traits. These categories were created and characterised by the women during discussions amongst themselves, with no researcher intervention. The two lowest categories are those subsistence level families without significant land holdings, material assets, and no savings.

Butobere Parish was estimated at 1, 726. Of this, 875 (52%) were female. Data on specific age cohorts for the village were not available; however, statistics for the municipality county, of which Butobere is part, state that 30% of the female population were between zero and nine years of age. Twenty five percent of the female population were between the ages of 10 and 19, while another 32% were 20 to 39 years of age. Only 3.2% of the women in Butobere were over 65. Data on marital status specific to Butobere were not available, however, for the entire district of Kabale, 72% of women 20 years of age and older were married, 12% were widowed, 11% had never married and four percent were divorced or separated. The research sample selected reflected these characteristics in that 65% of the study respondents were married and living in male headed households, 10% were divorced or never married, while the remaining 25% were widowed female heads of household.

The Triple Roles of Kabale Women

This study was particularly concerned with the lives of women and their ties to agroforestry systems. To make the invisible visible, Moser (1989) proposed viewing women's lives in terms of their triple roles and identifying each task associated with the roles of reproductive, productive and community work. The details of these roles for Kabale women are examined below.

Reproductive: The reproductive realm of women's responsibilities includes all of the aspects of childbirth, child raising, and household work that ensures the sustainability and continuation of the labour force. This role can include food production and preparation, housework, and caring for the children.

In Kabale District, the household and children were the primary domain and responsibility

of women. Women were solely responsible for cleaning, sweeping, and having repairs made to the house. If the repairs required hiring labour, the women often paid for the work. Children assisted with this work, especially in fetching water, sweeping, and washing dishes. Babies and small children were tended to, fed and cared for by their mothers. The women took their children with them most of the places they went, including the fields. Men did not typically care for babies or small children. The women undertook all the digging, planting, weeding and harvesting associated with crop production during the period of this study. Occasionally, a man worked in the fields, but his work was usually in the capacity of day labourer for another land owner, or clearing a new plot of land for production. “*All agricultural work is done by women*” (respondent, Butobere village, December, 1995).

Productive: The productive role refers to income generating activities and commercial market pursuits. The productive role comprises work done for cash or other forms of payment. Any activity, whether it be a part of the formal or informal economy, that generates income is considered to be productive work.

For many women, income generation to pay school fees and buy household items was a part of their daily activities, whether or not there were other income earners in the household. Activities commonly done by women included selling and trading small amounts of surplus crops and charcoal in the village, agricultural labour, and activities associated with a women’s group. Aside from scheduled group meetings, these activities were done in conjunction with one another and consumed a lot of time. For example, women often spent the morning of a typical day digging in their own fields. Then, they worked in other’s fields in the afternoon. If they could not find work digging, then they set up ‘shop’ on the side of the road to sell things, or, if they were at

home preparing meals, items for sale were displayed outside the house for sale to anyone who comes by.

Woodlots used for commercial production, once considered to be the work of men, was being undertaken by women. In female headed households that owned a woodlot, women planted trees, maintained them, and cut them at their own discretion. Many women from male headed households also did this work; others had to consult their husband before making tree related decisions. This largely depended on the personality of the husband.

Community: Community management activities are an extension of women's reproductive role. It is unpaid work which ensures the continuance and well-being of collective community resources, such as water, education and health care.

The care of sick children and AIDS victims was an essential and demanding community service fulfilled by *Bakiga* women. This included not only providing and administering medicines to the ill person, but also preparing meals and spending time caring for the person and any children the ill person had. Teaching children (especially girl children) agricultural skills such as “how to dig” was the occupation of women; usually the children’s mother or grandmother. Women in Butobere also spent time educating and supporting one another, particularly the women that belonged to women’s groups. In addition to digging and other income generating activities of the groups, women taught one another skills such as basic literacy and baking.

Since this study was concerned with the impact of women’s responsibilities on agroforestry practices, less information was collected about these activities than about the reproductive and productive realms. While the women of Butobere may have been very active in community projects, such endeavours were not readily observable during trips to the community

as the focus of visits was on the home and fields. Within the roles and expectations of *Bakiga* women there was considerable overlap between their reproductive, productive and community management work. For example, while generating school fees was a productive activity, it often became the woman's responsibility because it was associated with the care of children. All labour tasks, except for building², were being done by women, thus placing considerable demands upon their time. Now that the basic expectations felt by Kabale women have been described, the themes found to have an impact on these roles are presented below.

Key Social Factors Affecting the Decisions and Behaviours of Women Farmers

The themes, which include land and tree tenure, population pressure, land availability, household demands and women's resources, alcoholism and family violence, AIDS related illness and death, and female community solidarity, were derived from content analysis of transcribed interview material. Secondary data, identified during the course of the study, was used to supplement the thematic analysis. Prior to the description of each theme, selected quotes from interview respondents are presented.

Land Tenure

“It is not possible for me to lose control of my land because when my husband died, he left everything in my hands.”

“The giving of land to girls in the present generation has changed because girls also contribute to the well-being of the family.”

In the past, it was not customary to give land to female Bakiga children. Rather, fields

² Constructing houses, fences, granaries, etc. was the occupation of men. Women did not report doing any building, nor were they observed doing so.

were given to male children under the assumption that the land would be divided up among his wives to cultivate for the benefit of themselves and their children (Nzita and Niwampa, 1995). However, like the larger culture that surrounds them, systems of customary land ownership and inheritance among the Bakiga are not static and rigid. These systems have adapted and evolved to meet the needs of the people. As well, actual behaviours regarding land practices are a *reflection* of traditional customs, not a strict conformation to the rules. In particular, “[i]n situations of rapid change there may be considerable discrepancy between what is happening in actual transactions and the norms as expressed by elders or other informants” (Brock, 1969; 3). It is important to keep this point in mind, as there are some discrepancies between what Bakiga people claim are the land inheritance practices, and what village farm women tell as their stories about how they received the land they cultivate, and who makes the use decisions over that land.

Land tenure in Kabale is predominantly customary³, with only 2.4% being titled holdings (Kabale Department of Lands and Surveys, n/d). Lands are still frequently passed from father to son, and priority claim to a parcel of land is held by the male children of the owner⁴. When the child receives his share of land depends upon the decisions and resources of the parents. The most common pattern is to give the son a piece of land upon marriage. The parents retain enough land to be able to feed themselves. The remaining land will pass to the son after the death of the parents. Often, an aging widowed mother will give all her land to her adult children, and the children are then expected to provide food for her.

³ Customary land ownership is dependent upon the owner’s ability to demonstrate use of the land over a period of time (Kigula, 1993). Community members usually know, through historical use, who owns which parcels of land.

⁴ In cases of polygamous marriages, the son only has claim to lands owned by this father *and* cultivated by his mother. Land cultivated by other wives is entrusted to the children she has from the marriage.

Girl children are given land when both parents have died and there are no sons available to take it. This also applies in cases where a son exists, but does not live in the area, and has no intentions of coming home to resume cultivation of the land. Rather than leave the land in disuse (which may make it vulnerable to a take over attempt by another farmer), it will be given to the daughter. Married daughters can inherit land from their parents, but it is assumed that she will have access to land through her husband. Therefore, single and widowed, divorced or abandoned daughters inherit land more frequently than married daughters. It is also not uncommon for a divorced, widowed or abandoned woman to 'borrow' a piece of land to cultivate from her mother or brothers if they have enough to spare. In cases of married women inheriting land, the land remains her legal property and cannot be taken by the husband or his family.

There are no legal barriers to land ownership by women (Place, 1994). Women have the right to purchase and inherit land and property, and these rights are protected under law. Chapter 4, Article 26.1 of the 1995 Constitution of the Republic of Uganda states that every person has a right to own property either individually or in association. Articles 21.1 and 21.2 state that all people are equal before the law, and that no-one will be discriminated against on the basis of sex, religion, race, ethnicity, tribe, birth, creed, social or economic standing, political opinion or disability. Women shall be accorded full and equal dignity of the person with men (Constitution of the Republic of Uganda, 1995; 30).

The Intestate Succession Law protects a widow's claim to her deceased husband's land, and Article 31 of the Constitution states that Parliament shall make appropriate laws for the protection of the rights of widows and widowers to inherit the property of their deceased spouses... (NAWOU, 1995; 33). However, having rights does not necessarily mean that one can

or will exercise those rights, as Kigula (1993) notes that legal disputes involving women are common in Kabale District. The subject of land disputes is discussed in greater detail at the end of this section.

According to Mukoza-Kifuse (1991) (cited in Barton and Wamai, 1994), only 7% of Ugandan women own land. It is not known what criteria were used to define ownership in this particular study. Such an estimate may be accurate of formal ownership⁵, but it is misleading in terms of control that women have over land. Given the expectations of use accorded marriage and the legal protection given to widows and wives, one does not need to own land to have some control over it. As one respondent stated, *“I own the land through my children. They are my protection and claim to property”* (Anonymous, 1995). Many other women respondents reported being the person responsible for making use decisions regarding their agricultural land.

Polygamy is declining in southwest Uganda, and polygamous marriages are not considered legal⁶. In cases of polygamous marriages, upon arrival of a new wife, the husband is responsible to find new land for her to cultivate. He cannot take land already being worked by his previous wife and assign it to the new wife. Men have attempted to do this in the recent past, and law courts documents show that neither the women nor the courts will tolerate it.

Many women in Butobere are aware of their legal rights both as a wife and as a sole property owner, and will not hesitate to take the matter to the community elders or the Resistance

⁵ It bears repeating here that formal land ownership in Uganda is not a common form of ownership for men or women.

⁶ According to law courts documents reviewed during the course of this study, the church definition of marriage, as per English law, is used to define legal versus illegal marriage in Uganda. Therefore, polygamous marriages are not recognized as legal unions for purposes of property ownership and benefits.

Council (RC)⁷. In densely populated areas, such as Kabale District, land disputes are a common occurrence. Place (1994) reports that the most common reason for disputes is land boundaries, while Kigula (1993) claims that intra-familial disagreements over succession rights and division of plots are the most frequent types of cases. Interviews with RC members and a review of the courts documents⁸ supports Kigula's findings. Staff members of the Kabale High Courts office estimate that at least 40% of land disputes in the district involve women⁹. It is not unusual for a woman to sue her husband for attempting to sell or give her land to another person. Widows challenging their mothers-in-law or brothers-in law for rights over the deceased husband's land was also a common type of dispute encountered in the court files.

Tree Tenure

“Women can own land and trees because these days they are hard working, they do business and they are considered in land inheritance. Threats to women owning land and trees are not many, except those from their husbands and people

⁷ This is not to say that *all* women will pursue the matter. In cases where the woman is widowed or abandoned and she is living in a district that is not her natal district, the intimidation she may feel from her in-laws and the other villagers for being an outsider often motivates her to abandon the land and return home. Also, some women believe that the land is not worth the emotional exhaustion and social trauma that a fight for it can cause, so she willingly backs away from land conflicts. Finally, RC members must be paid for their services. If the community elders are not able to solve the conflict, and she cannot raise the money, she will not receive any assistance with her problem. While no quantitative data is available to determine how often women will or will not pursue a claim, it is the opinion of the researcher that the majority of women will exercise their rights, at least to the level of the community elders and RC.

⁸ These cases were taken from the High Courts office. There is a hierarchy of legal levels in Uganda. A complaint starts at the village RC I court. If it cannot be resolved, it goes to the parish RC II court, then the sub-county RC III court. The next highest level is the Chief Magistrates Court. The High Courts and Supreme Court are the top levels. Land disputes rarely go up to the Supreme Court. However, according to Kigula (1993), the informal RC courts levels are not taken very seriously by people in Kabale. Therefore, a large number of cases end up in the Chief Magistrates Court and are appealed in the High Court.

⁹ Statistical estimates were not included in the studies reviewed on this topic. The Kabale High Courts office do not keep separate records on the numbers and types of specific land dispute cases. Therefore, calculating statistics on the percentages of cases involving women and the types of disputes was not feasible during the field season for this project.

who want equal division [of the plots]. These women spend a lot of money in police court trying to fight for their property. There are laws to protect women in their problems, such as owning property. An association called FIDA, which is the Uganda Association of Women Lawyers assist women in personal problems.”

There is no recognized distinction between land tenure and tree tenure among the Bakiga. The frequent response to questions about tree ownership was that if one owns the land, then one owns everything that is growing on it, regardless of when or by whom it was planted.

According to Place (1994), there is no specific legislation in Uganda pertaining to tree tenure¹⁰. Trees, however, are viewed as an indication of land ownership and can be used to manipulate tenure. In numerous land dispute cases in Kabale District involving the ownership of a piece of land, the court officials physically went to examine the land in question. In those cases where the land had living trees, village members were questioned as to who planted the trees. The planter of the trees was taken as an indication of the owner of the land. Older trees growing on land were considered to be stronger indications of ownership than trees recently planted. Uprooting of seedlings planted by participants in local women’s groups were reportedly uprooted by men for this reason¹¹ (Kemerwa et. al., 1994; Guinand, 1995; Peden, 1992; Place, 1994). This was not mentioned as a problem by respondents in Butobere. In other cases, trees planted on land that was in dispute were uprooted by a participant in the dispute in fear that the courts may side

¹⁰ The only exception to this is the case of the Mvule tree (*Chlorophora excelsa*). The Mvule is a premium hardwood tree used for timber and high quality furniture. As such, it has been declared government property and a permit is required to harvest this tree regardless of where, when and by whom it was planted. None of the women interviewed in Kicumbi or Butobere mentioned this law in the interviews, indicating that they either are unaware of it, or the law does not immediately concern them.

¹¹ An additional reason given by the women for the men’s actions was that the men were simply jealous and could not stand to see the women (even if the women were their wives) become successful and gain more than they had.

with the planter of the trees as being the owner of the land.

Respondents commonly stated that trees were a household resource, to be used by all household members. Only in cases of cutting a tree were women from male headed households required to receive their husband's permission. The most common uses reported by the women as uses of trees were timber, building poles, cash sale, and brooms¹². None of the women respondents claimed fear of losing rights of access and use to trees they may plant as a reason for not planting trees.

Population Pressure and Land Availability

"I would like to plant some eucalyptus trees, but do not have enough land. I cannot plant trees on the fields. They are needed to grow food."

"People are so many now, they have to use all of the land they have. The children receive less land and land of poorer quality."

The total population is 417, 218 for an expanse of 1, 827 square kilometres. Thus, there are approximately 246.1 persons per square kilometre in Kabale District. What are more important than the statistics, however, are the *effects* of population pressure on agroforestry production of women farmers. Lack of land to plant trees on is repeatedly given as the main reason for farmers not planting trees. Obviously, population density is closely tied to the issue of not having enough land¹³.

¹² Firewood was infrequently cited as an important use, unless it was firewood for commercial sale. The women usually used charcoal, corn and sorghum husks, and fallen branches for fuelwood.

¹³ A related factor frequently mentioned in the literature for Kabale District, but not specifically dealt with in this thesis, is the plot fragmentation that results from Bakiga inheritance practices. In order to provide each child with some land, the plots are repeatedly divided and subdivided. "Fragmentation first acts to reduce an already small total farm size into tiny plots on which farmers are reluctant to grow trees for fear of ruining yields. Fragmentation also exacerbates the problems of off-season grazing, disputes, and damage from fire. Herders that would like to respect

Since agroforestry is an integrated approach to maximizing land use, it represents a potential solution to the problems faced by farmers in Kabale District. Why, then, are women farmers not introducing agroforestry practices within their overcultivated plots? This is largely an issue of perceptions, knowledge and priorities. Trees cannot be allowed to take up growing space on plots of land needed to grow food. Women view agroforestry trees as taking up space needed to grow crops, rather than as resources that share space with the crops and can potentially contribute to increasing the yield. The Bakiga women respondents were primarily concerned with providing for their children. Producing as much food as possible for consumption and sale represent avenues for feeding the children and generating income for school fees and clothing.

Alcoholism and Family Violence

"He requests for [sic] food when he comes back home and if the wife fails, he beats her up. These problems are brought about by husbands drinking alcohol. They can't stop drinking. This is affecting a large number of families."

"Women's laws should be put there so that they stop misbehaving. They [women] have started going into bars and spending the whole day drunk. So laws should be put there to protect both sides."

The brewing and consumption of alcohol is an accepted fact of life in Uganda, with roots in historical practice. Traditionally, births, marriages, naming ceremonies, burials, and other public

others' plots and graze on their own land nonetheless have to cross many others' plots in going between his [sic] own plots. Fragmentation also creates a large area of boundaries and coupled with tiny parcels, shading and root competition on neighbouring plots is a significant problem. Fragmentation also increases the likelihood of fire destruction on neighbouring plots as a result of burning one's own land. Finally, and perhaps most importantly, most do not have the desire to travel and work on the more distant plots" (Place, 1994; 54). There is some evidence that this practice is diminishing, as about half of the interview respondents stated that since their land holdings were already small, they would give their land to only one or two children, typically the first born, and the others would have to fend for themselves.

events included alcoholic drinks. Today, many women earn cash income through the brewing and sale of local sorghum beer and *waragi* (banana leaf gin) (Barton and Wamai, 1994). This practice was evident in Butobere during the field season of this study.

One elder respondent remembers drinking first becoming a problem during the colonial period of the 1940s through to the 1960s, when public drinking establishments first opened. During this time there was also an increase in paid employment opportunities and men gaining access to their own cash income. This was also a period when the district was experiencing the effects of population pressures, families were relocating to new districts, and agricultural yields were declining.

Alcoholism is related to family violence, erratic behaviours, and irrational expenditures. According to Barton and Wamai (1994), brewing, selling and over-consumption of alcohol is largely a consequence of poverty. According to the women participants of this study, alcoholism is perpetuating poverty and keeping families poor. A few small scale studies were done in Uganda during the 1970s and 1980s (see Barton and Wamai, 1994). These studies documented that male alcoholism is a significant influence on family disruption and dissolution, including domestic violence. Male alcohol abuse is also a contributing factor to the rise of female headed households in Uganda.

There is little known about family violence in contemporary Africa, except that it exists and is becoming an increasingly bigger problem¹⁴. The evidence that exists, most of which is in the form of qualitative information, suggests that alcoholism and family violence are positively

¹⁴ A search of the current literature did not uncover any relevant studies addressing alcoholism and violence in rural Africa. Often, injuries caused by violence are reported as “accidents” (Murray, 1996).

correlated with each other and have a significant effect on resource use and management. For example, in Burundi, men have been known to repeatedly beat their wives until the women can no longer tolerate it, and leave. According to local custom, since the woman *chose* to leave her husband, she subsequently has no claim to any of their common property, including land, and the husband is entitled to take another wife (Guinand and Hitimana, 1994). The issues of drunkenness and the behaviours related to drunkenness, especially violence and abandonment, were raised as often as the issue of land availability by respondents in the study.

Economically, alcoholism can be very expensive to a family, draining household resources that are needed for school fees, agricultural inputs, labour and food. As previously stated, many alcohol abusers have sold land to finance their activities. Crop cultivation may be affected as farmers may use their land to grow cassava, maize and millet for brewing, rather than crops for home consumption or sale (Barton and Wamai, 1994).

Alcoholism is not the strict domain of men. Alcoholism amongst women is on the rise in Uganda, and is often attributed to their involvement in the beer and spirits brewing industry, especially in urban areas (Barton and Wamai, 1994). In Butobere, respondents attributed the rise in female alcoholism to emotional trauma inflicted on women by the AIDS death rate within their families, general depression and having no land to cultivate.

AIDS Related Illness and Death¹⁵

“I wanted to start a business, but I had to take care of my daughter. She was sick.

Now that she is dead, I can maybe save some money and start a business.”

¹⁵ The figures and discussion refer to cases of AIDS illness, not HIV infection. Due to the nature of the illness, the rates of HIV infection are considerably higher than that of AIDS cases.

“I would only sell my lands if there was no-one to take them over - or if someone got sick and needed medicine.”

Acquired immuno-deficiency syndrome (AIDS) was first recognized in Uganda in 1982. Since that time, the National Resistance Movement (NRM) government has taken a proactive stance on AIDS by establishing the National AIDS Control Programme (ACP) in 1986. This body was responsible for overseeing AIDS education, home care, counselling and monitoring of the epidemic. In 1992, the Uganda AIDS commission (UAC) was formed in order to approach AIDS from a multi-sectoral perspective. The UAC has the view that AIDS affects all sectors of society, and the areas of health, education, development, agriculture, and economics must become involved in order to control the spread of the virus.

Currently, Uganda has one of the highest reported AIDS rates in Africa, and it is the leading cause of death amongst adults (Barton and Wamai, 1994). Based on the number of reported cases, it is estimated that 2,314 of every 1,000,000 people has the disease¹⁶, however, due to the behavioural complexities of AIDS transmission, the costs involved in diagnosis, and the difficulty in reaching people that may have it, this is a conservative estimate. The actual number of cases is likely 5-7 times greater (Barton and Wamai, 1994). Ninety-one point eight percent of cases have been adults, while the remaining 8.2% are children. Of the adult infected population, 80% are between the ages of 16 and 40. Fifty two point three percent of AIDS victims are women.

Young women are particularly vulnerable to contracting AIDS. Reports indicate that within the 15-19 age cohort, females are six times more likely to contract AIDS than are males

¹⁶ As of June, 1993 (Barton and Wamai, 1994) .

(Barton and Wamai, 1994). Numerous reasons are given for the slightly higher overall infection rate of women. These include biological considerations, formal and informal polygamy, inheritance of widows, weak decision making power of women over their own bodies, poverty and prostitution, and unarticulated cultural sexual expectations placed on women such as the myth held by men that having sex with young women will protect one from contracting the virus (Barton and Wamai, 1994).

Women also tend to bear the brunt of responsibility for coping with effects of the disease (Barnett and Blaikie, 1992; Barton and Wamai, 1994). As the primary caregivers and providers for the family, women are expected to care for ill family members both by the community and the afflicted relative. Middle aged and elder women are selling plots of land and sacrificing resources to buy medicines for their infected adult children. Orphaned children are at risk of becoming urban street children if there are no other relatives willing or able to care for them. Grandchildren are typically left with the grandmother (if she is willing) or a sister of the mother. Feeding these children often proves to be difficult, and school fees become an extra expense that cannot be met.

AIDS has serious implications for the demographic, social and economic viability of Uganda in the coming decades. In addition to the sharp decline in the productive population (16-40 year olds), an HIV-positive mother has a 30-40% chance of passing the virus onto her children. Most of these children die before the age of five. Of non-infected children of HIV-positive mothers, 18% will be orphaned in early childhood or die from diseases and health problems related to lack of care.

Rural farm children contribute much to the family in terms of their labour power. Barnett and Blaikie (1992) examined the impact of AIDS on farming systems in terms of the loss of labour

capital for subsistence farms in Uganda. Their study notes that farming systems that depend upon immediate family, as opposed to extended family, for farm labour are more vulnerable to dramatic effects of AIDS deaths on their production. Such nuclear family oriented farming systems are found in Kabale District. The researchers found it difficult to anticipate the impact of labour loss due to AIDS deaths because of the resourcefulness and flexibility of rural farmers. Farms affected with reduced labour supply tended to compensate by increasing the working day, intercropping, staggering agricultural activities, labour sharing arrangements, switching to other economic activities, reducing consumption, and rural-urban migration. A switch to other economic activities and reduced household consumption were the compensations noted by respondents to be prevalent in Butobere. Also, it was noted in the study that innovations that may require additional labour to execute or maintain were avoided by farmers. The planting and maintaining of trees in agroforestry systems is one such innovation that may place additional labour demands upon a farm household.

The AIDS epidemic effects not only local subsistence production, but the national economy. As well, resources that could be channelled into other, needy sectors of the economy are being used for AIDS activities. Plots of land are sold to buy medicines for ill children and labour intensive crops are being replaced by less intensive (and often less nutritious) crops (Barnett and Blaikie, 1992). Women are forced to cut back the number of hours they spend on agricultural and income generating activities, including the planting and care of trees.

In social terms, the epidemic is slowly taking the lives of the productive, the skilled and the educated human resources who are needed to lead Uganda into the next century, as well as the young parents that are needed to raise their children.

Household Demands and Women's Resources

“Men hide the money they work for and let the woman do all that's needed in the home.”

“I have no husband. I am the one responsible for everything at home. I think this is true for most women who don't have husbands.”

Preceding themes in this section have already profiled the household demands placed on Bakiga women. Thus, they do not bear repeating here. The lack of household resources, or lack of access to resources, were also influential factors in women's agroforestry behaviours. The household demands commonly cited by women as most important included providing enough staple foods for household consumption and generating sufficient cash income to pay school fees and purchase household items and clothing. The relationship between household demands and agroforestry is indirect, but important nonetheless.

The study data indicated that it was the household demands and level of resources available and accessible to a woman for her family that influenced how she set her priorities, how she spent her time, and what she did with her land. The household system may have had additional resources, such as the wages earned by a husband or other family member; however, it is evident in the responses of many women that they were responsible to provide food and other items for household members in addition to their children. While these household members may have been employed, they were not obliged to contribute resources to the household.

Female Community Solidarity

“The only solution to little land, less food, no money, and poverty will come from the women working together in the women's groups and deciding for themselves

how to manage their lives.”

“I have gotten cups, mattresses, blankets and saucepans from being in the group. Some of the members have learned digging. Some of the women that could not read or write have learned how to do that.”

Unlike the other themes discussed here, women’s groups are not a restriction to women. Rather, they have become a fundamental development and support network. Various groups have been initiated by churches, local development organizations, and small groups of local women in order to generate financial capital and educate the members. Craft production, farming, baking, credit and savings programs, literacy classes and tree planting are a few things some of the groups do. Two examples of grassroots organizations - the Butobere Women’s Development Group, and the Ugandan Women’s Tree Planting Movement - typify the spirit and potential of women’s organizations in Uganda.

Within Butobere, the Butobere Women’s Development Group (BWDG) is a success story for its founders and members. Formed in January of 1994 by a small number of village women, the initial goal of the group was to establish a credit and savings society¹⁷. The group then branched out into handicraft production, but quickly abandoned that pursuit due to a saturated market¹⁸. The group has undertaken such diverse activities as baking, basket and mat weaving, literacy classes, and vegetable farming. Currently, vegetable farming for market sale is the group’s

¹⁷ Credit and savings clubs are very popular within Kabale villages. Usually, the club has a bank account to which each member contributes a small sum each week. The capital is then used to finance loans and purchases of household items for the members.

¹⁸ The members still produce handicrafts for their own use and on order but it is no longer an organized group activity.

primary activity¹⁹.

The group is governed by an executive committee of nine annually elected women. They have a bank account that is managed by a treasurer. There is a membership fee of 3,000 Ugandan Shillings (USh) to join the group. If a potential member cannot afford the fee (which is the case for many group members), she can raise it by working for the group and other community members. Funds are raised from the membership fee, missed meeting fines, and the sale of various group products. The group is not engaged in agroforestry, but has some interest in integrating trees into their vegetable garden and teaching the members about agroforestry²⁰.

The BWDG has strict rules about attendance at meetings. The members meet every Thursday morning to work in the BWDG's fields for a few hours. They grow vegetables for market sale and use the money to further the group's activities and raise capital for members to access as loan funds. Sunday afternoon is the administrative meeting and lasts one to two hours. If members fail to come to a meeting, they are fined 400 USh. Missing more than 3 consecutive meetings or not paying a fine can result in expulsion from the group. This system appears to work, as they have grown from 23 original members to 52 as of October, 1995, and they have only lost three members within the last two years.

The group has attracted a wide range of women members. According to the president of the group, most of the women are subsistence farmers who own very little or no land. They range in age from late teens to 70+. The majority of the women are from the lower socio-economic classes (groups one through three of the wealth ranking categories), and many are the heads of

¹⁹ The group owns a large garden plot that was donated to them.

²⁰ Specifically, the group has an interest in planting fruit trees, such as oranges, avocado, and passion fruit.

their households²¹. Interviews with group members indicate that the members have gained substantially from the group, both in knowledge and material items. In October of 1995, the group received a seven million USh loan from the Uganda Government Poverty Alleviation Program (PAP). The funds are being used to provide loans to group members to purchase plots of land.

A second example of women's group activities is the Uganda Women's Tree Planting Movement (UWTPM). The group was created in 1985 to promote afforestation, tree planting, and environmental conservation by grassroots rural women's groups²². The UWTPM believes in and supports grassroots efforts and the self empowerment of rural women by facilitating their projects, but not "doing it for them". Other services available to rural women's groups include business and proposal writing seminars, woodlot management education, literacy classes, financial planning services, family planning services and AIDS education. The UWTPM is aware of the interconnected nature of environmental degradation and socio-economic factors, and hence aim to increase awareness of the environment and motivation to plant trees through addressing other key needs areas identified by the women's groups. The UWTPM has collaborated with local NGOs in past initiatives to promote tree planting and soil conservation in Kabale District. According to the executive director of UWTPM, there is a general awareness of the environmental issues facing Kabale District, but the lack of property ownership for women, and population pressures on the

²¹ These statements are estimates based on information given by group members and community members. Exact figures were not available for the group.

²² The founder and current executive director of the UWTPM is a midwife from southwest Uganda who saw the need for trees as a health issue impacting on the nutrition of women and children. Without an adequate supply of firewood, it was difficult for women to cook the more nutritious foods, such as potatoes and beans. Thus, even if the women grew these foods, they did not necessarily have access to them for their own consumption, and tended to eat more simple, easy to prepare (and less nutritious) foods.

land in general are preventing women farmers from doing anything about the problems.

Women's groups are a vital development resource and a potential means through which to promote agroforestry, not only in Kabale, but in other parts of Uganda as well. The groups recognize the inter-relatedness of socio-economic factors on agricultural production and are addressing these issues to create situation specific solutions. As well, the groups recognize and understand the demands and constraints faced by the women. Thus, they are in a strong position to address these demands and constraints.

Having access to land is the most important variable identified in terms of one's ability to plant trees. This land can be one's own, but land acquired through marital channels is also eligible for tree planting. Having adequate access to staple foods, and then cash income to meet family needs are the next order of priorities that women seek to meet with their land use behaviours. Drains on the household, such as an ill family member, newly arrived children (grandchildren, nephews/nieces with deceased parents), domestic violence and alcohol abuse problems complicate household needs and often result in channelling of resources to meet these requirements, at the expense of potential agroforestry practices. Women's groups help to alleviate poverty problems and empower women to learn new skills. When confronted with the decision of whether or not to plant trees within a crop or home garden system, these factors are considered during the decision making process. To better understand how these themes manifest within the daily lives of individual women, and affect agroforestry behaviours, HET is a useful tool. Before exploring the life of Mauda, a Butobere farmer, HET is discussed in detail and the agroforestry system is placed within a similar model.

Utilizing Human Ecological Theory for Understanding Agroforestry Systems and

Individual Farmers

Human ecological theory is a specially adapted version of general systems theory, in which all systems function as a self-stabilizing unit. Input into the system reacts to produce throughput and output, which in turn have varying degrees of further influence on the system through response mechanisms and systems exchange (for a detailed discussion of general systems theory, see Whitechurch and Constantine, 1993). A human ecological framework conceptualizes humans and their structures in systems of dynamic interaction with near and far environments. A basic premise of this approach is that the world's ecological health is a macro-level determinant of the quality of human life. Human decisions and actions at national, communal, familial and individual levels, in turn, determine the health and sustainability of the earth's resources (Bubolz and Sontag, 1993).

An Ecosystem Model of Agroforestry

To fully appreciate the systemic context of an agroforestry system, all of the components can be seen as embedded in a human ecological framework. Figure 1 portrays an agroforestry ecosystem within broader level systems using a technique Vayda (1983) calls progressive contextualization. In this technique, layers of detail are defined and made explicit. Progressively contextualizing systems aids in understanding the theoretical distinctions between system boundaries and system interaction. The fact that certain systems will intentionally cut across the boundaries of adjacent systems to take advantage of particular subsystems is acknowledged. One example of this approach is making clear how national and global economies penetrate local economies to access market subsystems and social systems to take advantage of needs subsystems. Progressive contextualization may help to develop inductive, rather than simply

deductive, systems classifications that are sensitive to these types of phenomena. This model adapts the four tiered human ecology classification system suggested by Bronfenbrenner (1989) (see Figure 1). The immediate agroforestry system consists of interacting micro and meso systems. The widened context consists of exo and macro systems.

The first system level, shown in detail in Figure 2, the agroforestry microsystem consists of the objective agroforestry elements: trees, plants, animals, soil, land, marginal tracts of forest, growing seasons, local and imported species, nutritional water needs of the organisms, and all other concrete elements of an agroforestry system.

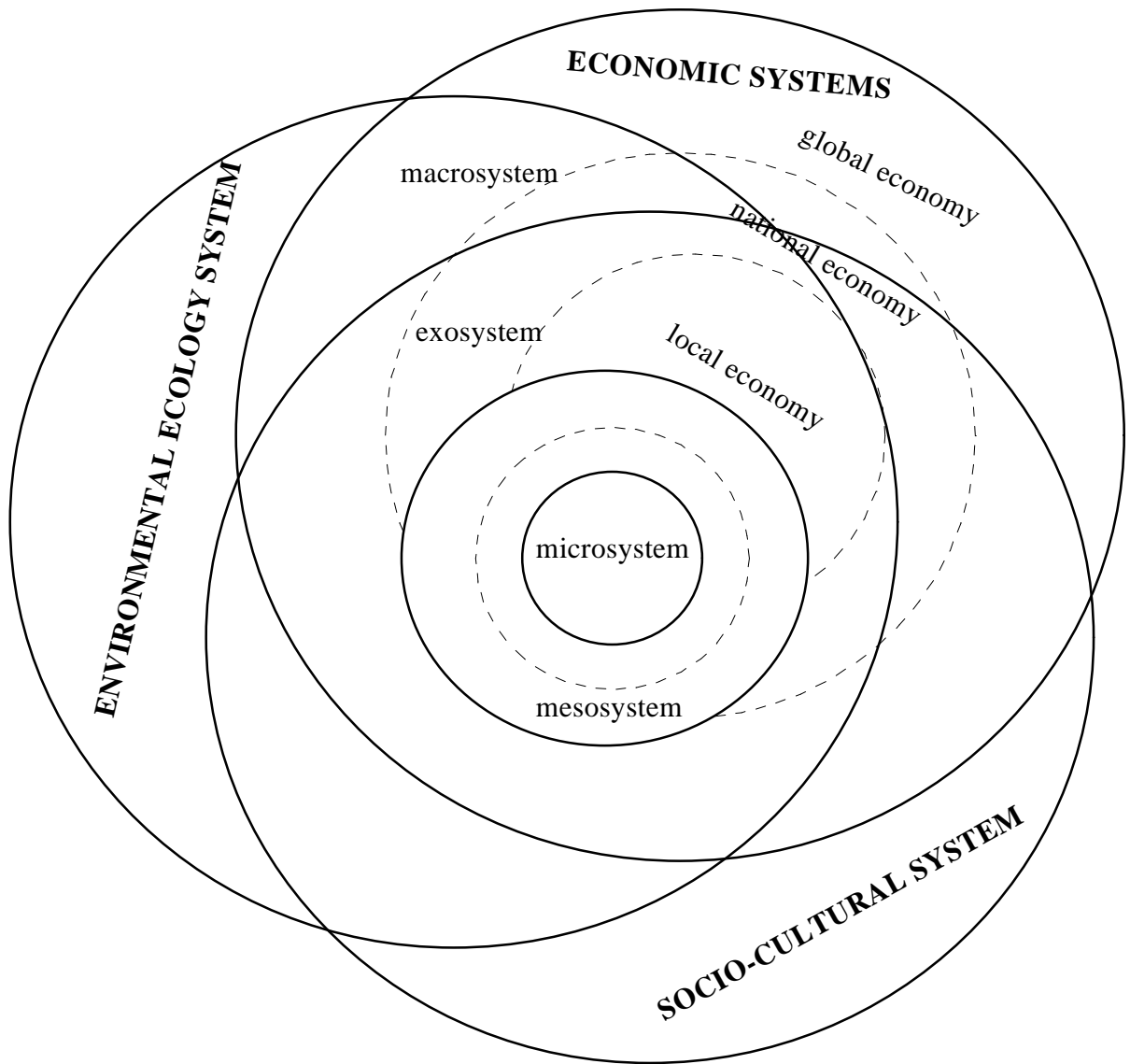


Figure 1. Theagroforestry ecosystem.

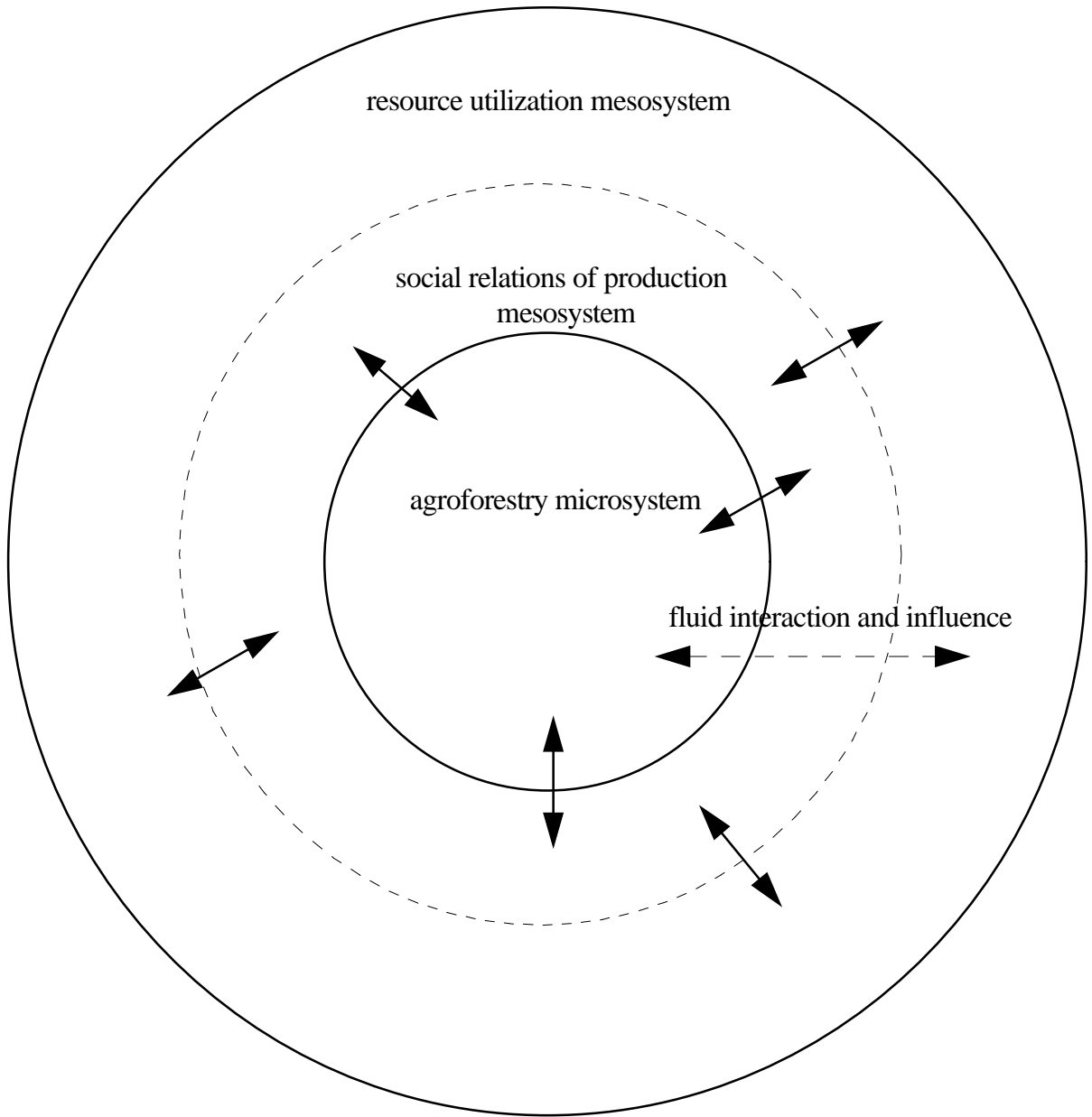


Figure 2. The agroforestry micro and meso systems.

The exosystem is the adjoining environment that provides a context and directs the micro and meso systems. The exosystem directly influences the agroforestry system, but is external to it. As is shown in Figure 1, the exosystem consists of the three variables discussed earlier, environmental ecosystem, the socio-cultural milieu, and the most immediate levels of the economy. While it can be argued that economy is an extension (and indeed a construct) of the socio-cultural system, in research analysing the various aspects of agroforestry systems, economic and social considerations are often treated as related but distinct components. To illustrate the point of the interdependent, overlapping nature of these influences, the economy is treated as a distinct component in the model.

The agroforestry macrosystem, as implied by the name, is the larger environment to the agroforestry system. While the macrosystem does not touch the agroforestry system directly, it can have profound impacts upon it as in the case of the global economy or the national or global environment. A primary purpose in depicting the macrosystem is to locate the exosystem clearly within a region of equal overlap between the natural and human constructed environments, in the hope that one set of values will not be privileged or considered more important than the other.

The success and continuity of the agroforestry microsystem are dependent upon the interactions within the mesosystem which consists of two dimensions presented below (see Figure 2). The mesosystem is usually depicted as the intangible aspects of human systems. Some models actually show the mesosystem as above the other more concrete dimensions of the system.

The first dimension of the mesosystem in this model is identified as the social relations of production mesosystem. This crucial process component enables the objective agroforestry system or microsystem to be transformed into usable resources. Included within this level are such

factors as knowledge, both indigenous and scientific; ability and willingness to use technologies; division and responsibility for labour, care, maintenance and harvesting of agroforestry resources; gender relations; cultural restrictions and expectations; access to and control over land, livestock, trees and their resulting resources; and decision making power. Inter and intra household resource use and management practises also occur within this level. The successful production of usable resources from the agroforestry system, and what is done with those resources, depends upon the events occurring within the social relations of production mesosystem.

An example of this interdependence of the microsystem and the social relations of production mesosystem is clearly depicted in a case about cash crop tea farming in Kericho, Kenya (Sorenson, 1990). Being a commercially oriented pursuit, tea bushes cultivated for the export market are primarily a male interest. As a result, the land on which the tea is grown is controlled by the male head of household and any income gained from the tea fields belongs to the man. Tea farming, however, is extremely labour intensive. All but the wealthiest of farmers thus depend upon their wives as a vital source of labour to maintain and pick the tea. In cases where males were unreasonably spending all income on themselves, and not contributing sufficiently to the household expenses, the wives withdrew their labour. As the traditional responsibilities of Kipsigis women are to directly provide food and reproductive labour, women maintain the right to refuse to participate in cash cropping initiatives. When the women withdrew their labour, the tea bushes died or became overgrown, thus halting production. In this manner, the social relations between males and females heavily dictated the success of farming initiatives.

The other identified dimension of the second level is the mesosystem of resource utilization. Whether resources are available to be used for domestic consumption, trade or

commercial sale depends upon the outcome of the social relations surrounding the production and the decisions made about the material assets of the operation. As shown from the example above, whether or not the agroforestry crop ever becomes a usable resource depends significantly upon the influence of the social relations of production on choices for the tangible aspects of the agroforestry system. Unequal or *invisible* social relations of production take their toll on the lived realities of women and children within this mesosystem.

Application of the Model: Mauda's Life in Human Ecological Terms

Mauda's life was first conceptualized in terms of her own human ecological reality, using Bronfenbrenner's (1979) model of the developmental environment of the individual. Bronfenbrenner's model identified four nested levels, with the individual at the centre. Within the most immediate environment, the microsystem, are the relationships and activities that are present in the individual's daily life. The next layer, the mesosystem, is the processual, interactive layer. It represents exchanges between the microsystem and the exosystem. In this instance, the mesosystem operates as the decision making process of Mauda, and how the decisions she makes based on her life circumstances impacts on her farming system and how she utilizes her land. The exosystem contains more distant influences that have a direct influence on the individual, whether or not the individual is present or aware of the influence. The outermost structure, the macrosystem, represents the influences of the larger society and the encompassing context of values that comprise a culture.

Figure 3 is a depiction of Mauda's life within a human ecological framework. Mauda is at the centre of the system, surrounded by the tasks, relationships and responsibilities that

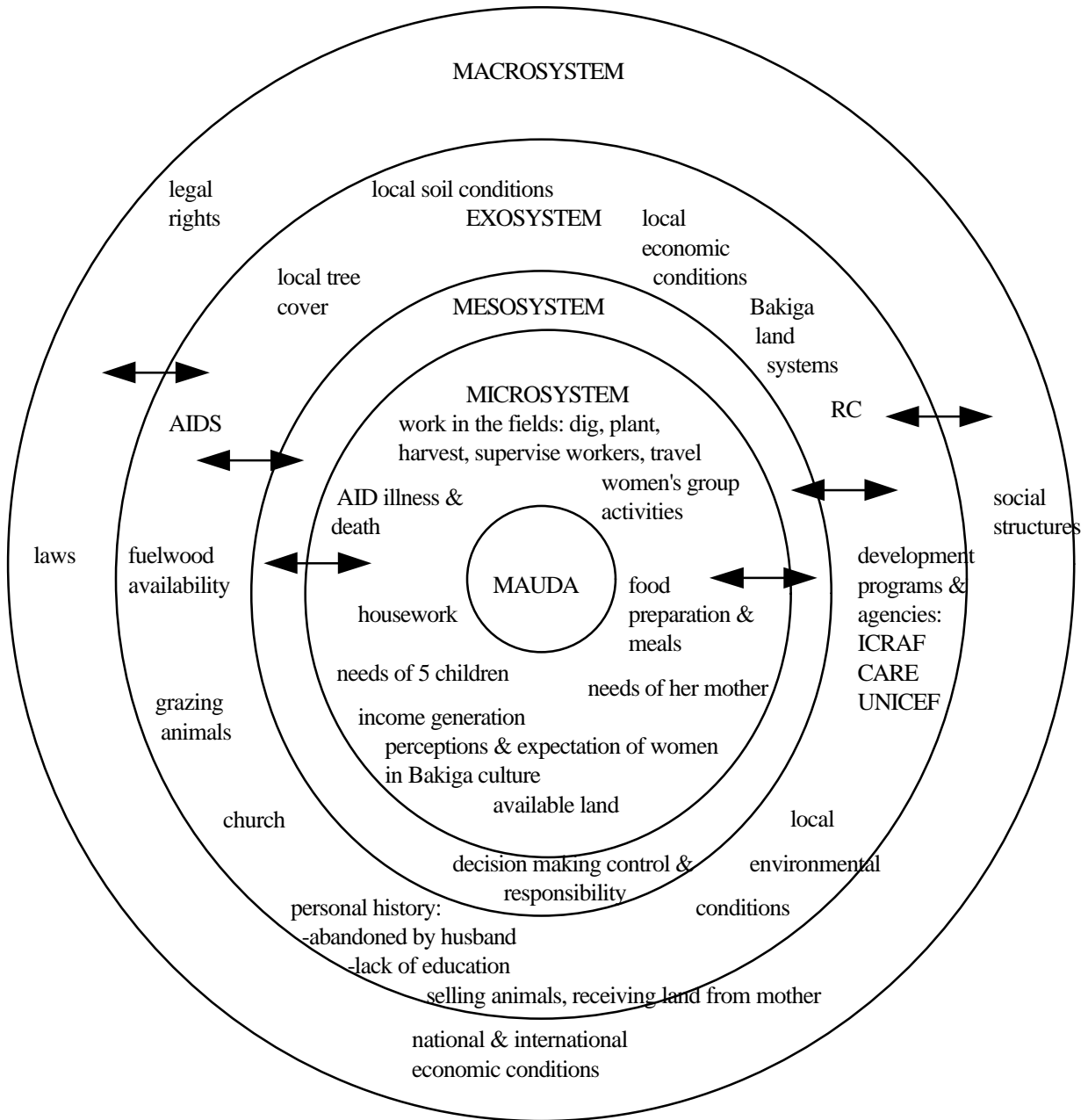


Figure 3. Human ecological model of Mauda's life circumstances.

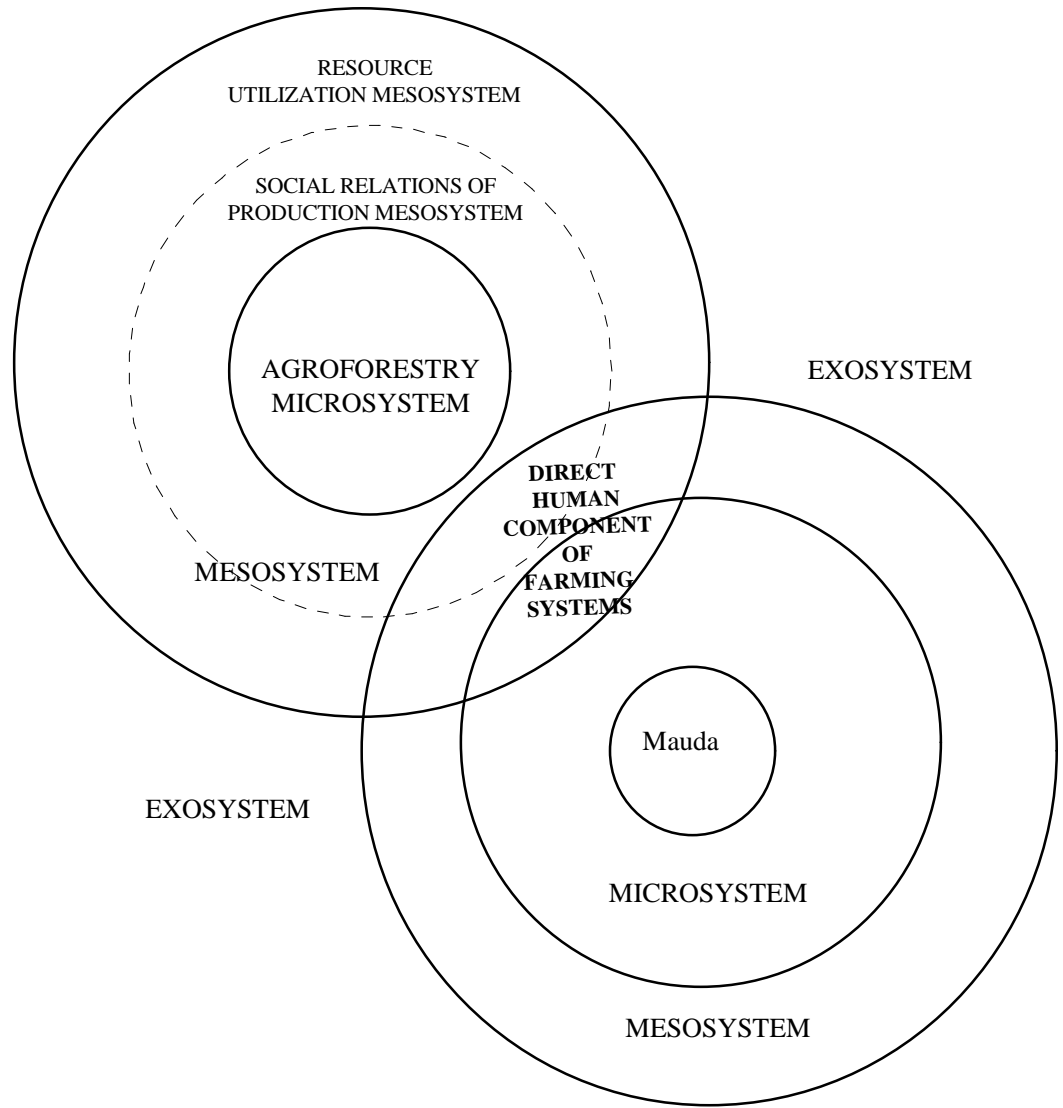


Figure 4. Interaction of Mauda's micro and meso systems with the agroforestry micro and mesosystems.

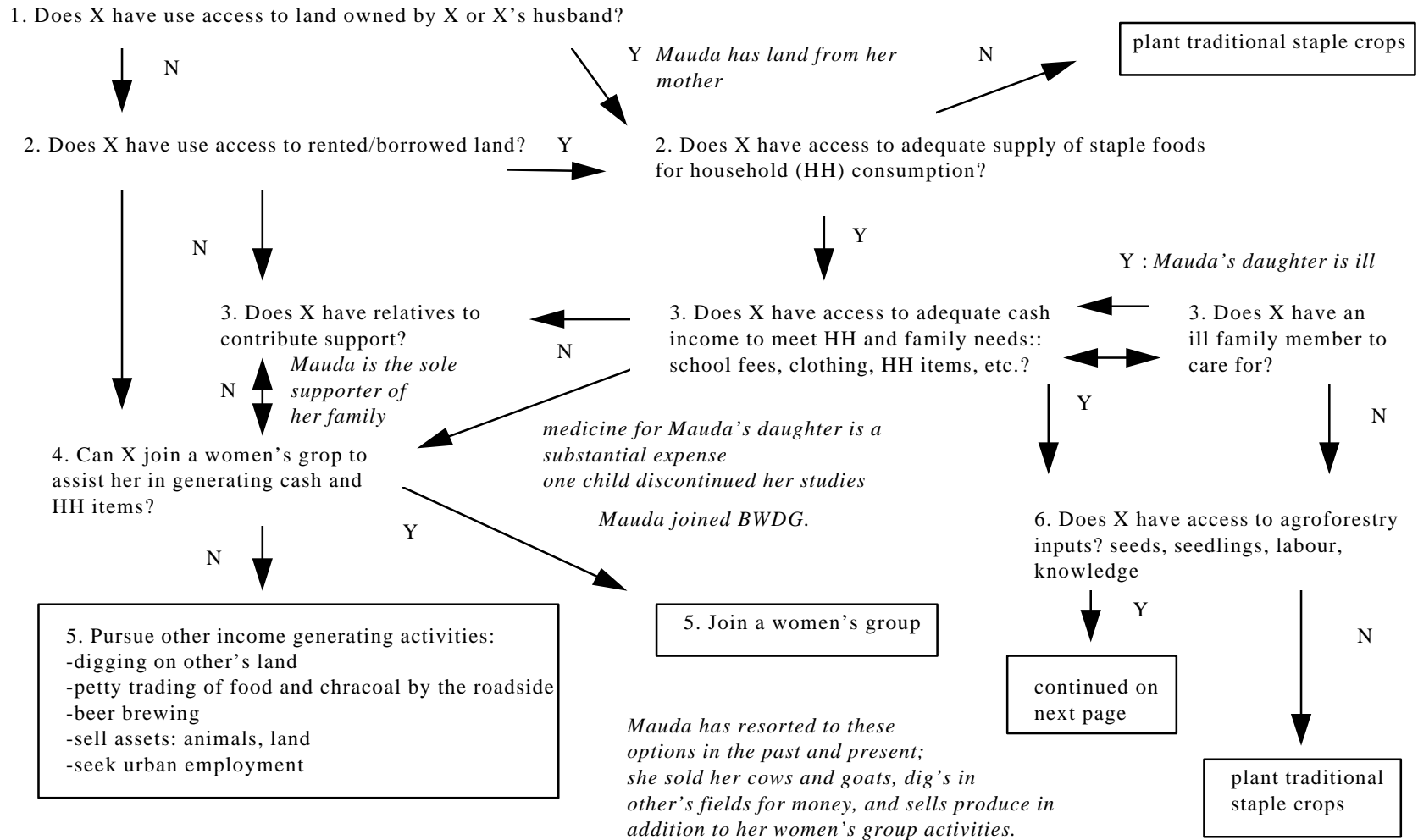
comprise her triple roles. These include the needs of her children, grandchildren and mother, all of the responsibilities associated with providing food and income for the household, her women's group activities, and the demands placed upon her by her daughter's illness. More distant but tangible influences include historical occurrences in Mauda's life, development agencies operating in Kabale District, the environmental conditions of Kabale District, the local fuelwood shortage, the church, the parish Resistance Council, *Bakiga* patterns of property and land inheritance, and people grazing their animals on her fields. The majority of exosystem factors operate at the community level, as opposed to macrosystem factors such as the Ugandan legal system, guaranteed rights of women, national and global economic conditions, and the AIDS epidemic which operates at national and international levels.

Figure 4 shows the interaction of the most immediate levels of Mauda's ecological system with the agroforestry micro and meso systems. In this model, the microsystem of the agroforestry system is its biophysical components. An important point to note is that there is a difference between the microsystems of an individual and a farming system, and that the human components of a farming system are operating within the farming system's mesosystem, rather than in the microsystem. The microsystem elements of Mauda's life create the social relations of production and resource utilization decisions and strategies within her household. The social relations of production are comprised, largely, of the elements found in Mauda's microsystem, while the resource utilization decisions are a product of the social relations of the microsystem and occur within the mesosystem. Taken together, these relations, decisions and strategies, impact upon the agroforestry microsystem in terms of how land is used.

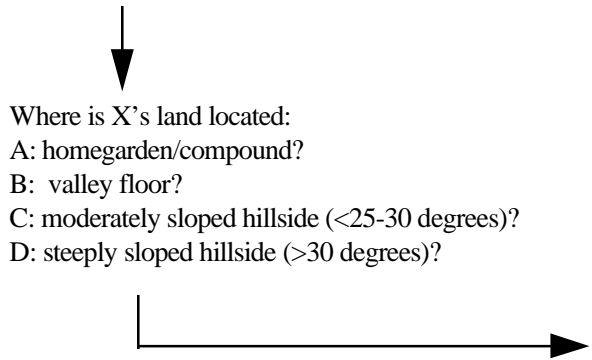
The Mesosystem: A Decision Making Process

The processes occurring in the mesosystem are shown in Figure 5. This figure depicts the

Figure 5. The mesosystem decision making process connecting Mauda to the agroforestry system.

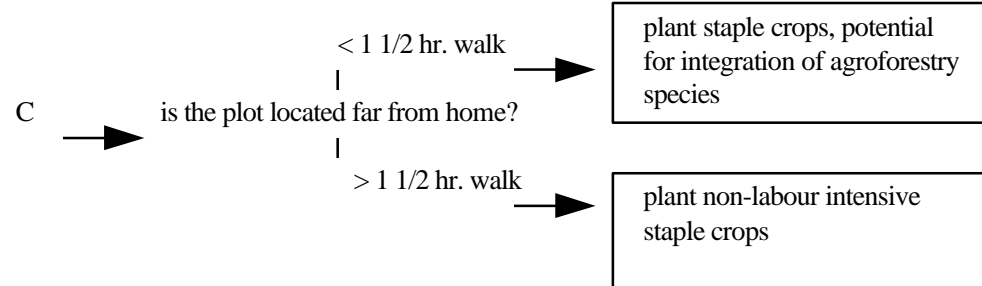


How will X use her/husband's land if she has access to agroforestry inputs?



A → plant banana plantation with vegetables

B → plant staple crops for home consumption & surplus market sale



D → plant woodlot trees

impact of each of the themes identified on the decision making process and typical outcomes of land use associated with basic resources women claim to need and frequently lack. The model is a generalized conceptualization of the issues considered when making land use decisions. Mauda's circumstances are presented in the model, showing how some of the issues she contends with work to constrain her from practising agroforestry.

The technique of ethnographic decision tree modelling was used to construct Figure 5. Ethnographic decision tree modelling is a research method in which the processes of decisions are identified, through ethnographic fieldwork techniques, from an emic perspective (Gladwin, 1989). In this case, however, the decision tree model is used as a tool for analysis, rather than a research method.

The decision tree presented in Figure 5 is a post-fieldwork model. The model has not been tested or revised in the field, as it would have been if the method had been used according to Gladwin's specifications; however, it does outline the possible decision making process used by *Bakiga* farm women and suggests an approach for future research. This directive for further research is revisited in a later section on future research and planning initiatives.

The criteria included in the steps of the decision making process, as well as the order in which each item appears in the process, were determined from the interview and observational data. Each step of the decision model is complex and could potentially be fragmented into a series of micro-decisions that create the macro-decision of each subsequent step in the model. For example, the criterion "Does X have relatives to contribute support" (Figure 5, level three) includes situations of family members that send cash remittances home, relatives that give gifts of food, a brother lending a tract of land to an abandoned sister to cultivate, or a mother who takes

in her widowed daughter and the children. Each circumstance creates individual outcomes of need with subsequent individualized decisions. However, in terms of identifying particular issues that impact on agroforestry behaviour, and the relative importance of each issue as articulated by women respondents, Figure 5 is an appropriate model of group behaviour with testable decision outcomes.

As Figure 5 clearly indicates, having access to and control over land is a first level requirement to the implementation of agroforestry; however, it is not the only consideration. Fulfilling the family's basic needs is the first priority of most women, and the decision of what to plant in the fields and home garden space reflects these needs. Plots tend to be used to generate sufficient domestic food supply and income to pay school fees. If a family member falls ill, available resources will often be channelled into the needs of the ill person. Women that have land (either their own or their husband's), who have their family's food and basic income needs met, and have access to agricultural labour, seedlings, and agroforestry education, are the most likely to implement agroforestry in their fields and home gardens.

Mauda has access to land and is able to provide sufficient food for her family. She is lacking in an adequate supply of cash income to pay school fees, buy clothes, and purchase medicine and medical treatments for her daughter. She joined a women's group, which has enabled her to generate some cash income. In addition to this, her past experience of relocating after the breakdown of her marriage, and the cumulative demands placed upon her and the household resources by the needs of her children, grandchildren, mother and ill daughter have resulted in her gradually selling off livestock assets and working as a labourer and trader to generate additional income. Mauda is operating within levels one to five of the model. She does

not have the resources to move into agroforestry practices, which are found in level six of the model. Alcoholism and family violence are not included in the model, as they are not relevant to Mauda's circumstances.

Figure 6 locates Mauda, her micro and meso systems, and her interactions with the agroforestry micro and meso system within the larger ecosystem. In this model, Mauda and the agroforestry system are impacted by similar forces in their respective exosystems. These forces consist of, but are not restricted to, local development agencies such as the International Centre for Research in Agroforestry (ICRAF), CARE International and others that address environmental and farming issues, the local educational system, the environmental conditions of Kabale (soil erosion and depletion, deforestation, etc.), land tenure and inheritance systems of the *Bakiga* people. Both Mauda and the agroforestry system are located within the same macrosystem of the biophysical, economic and socio-cultural influences of Uganda and the global environment.

Summary and Conclusions

This study investigated the social factors that have an effect on the agroforestry behaviour of women farmers in Kabale District, Uganda. The elements identified were land and tree tenure, population pressure and land availability, alcoholism and family violence, AIDS related illness and death, household demands and women's resources, and female community solidarity. Some of these factors acted as a drain on household resources, while others added to the resources available to women.

Human ecological theory, along with an awareness of the triple roles of women, was used to create a model of women's lives that can be used to identify the less visible aspects of women's

responsibilities and demands on their time. The model depicts how women's lives interact with and affect the agroforestry system through individual decision making processes,

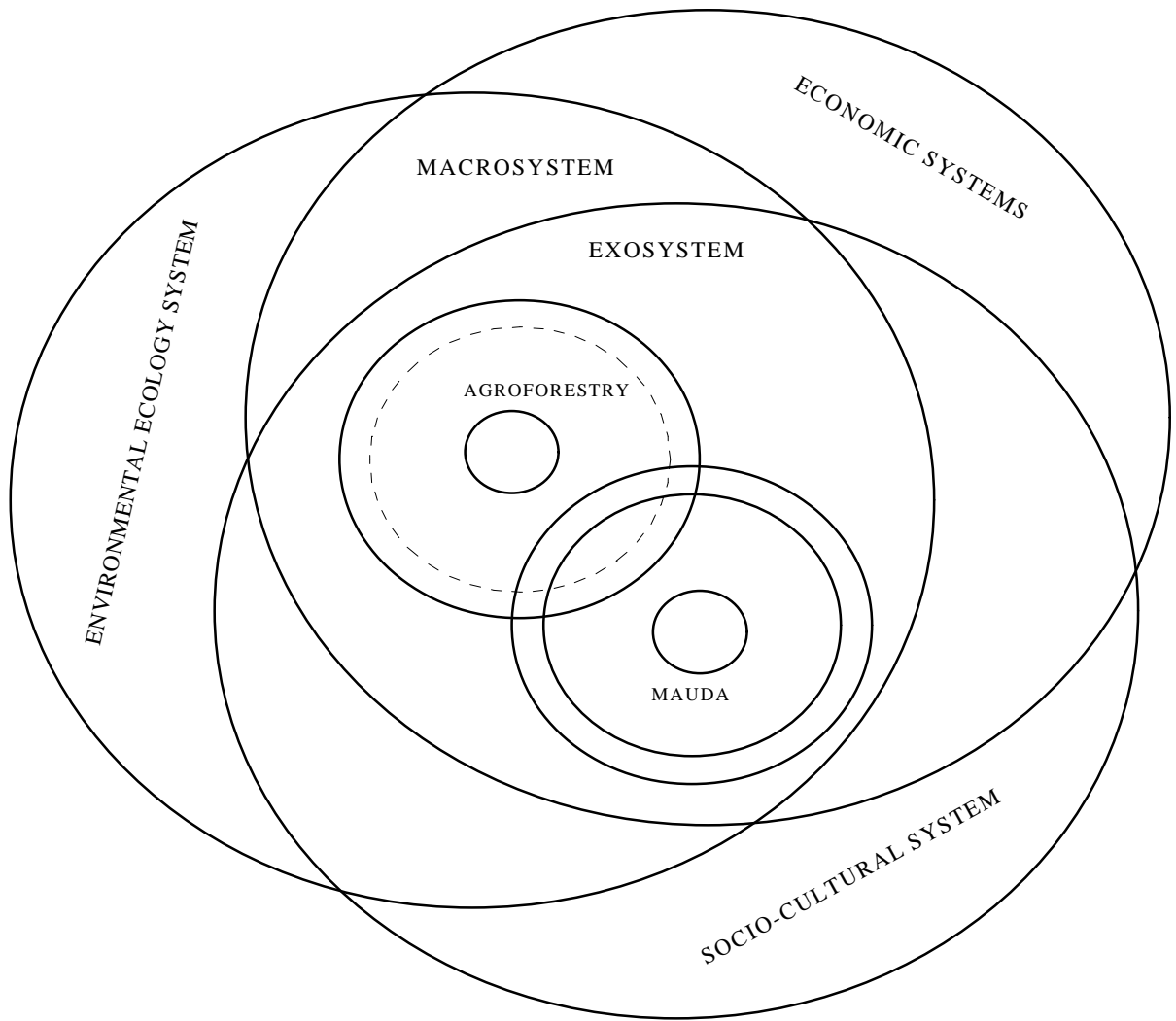


Figure 6. Human ecological model showing the placement of human systems and agroforestry systems within a larger ecosystem environment.

and it illustrates the interdependency of social and biophysical environments.

The interviews with farm women suggest that women have some control over what is planted in the fields. They make many of their own decisions regarding the land and are able to plant trees if they so choose without fear of eventually losing them. While many women expressed an interest in planting more trees, the main deterrent to actually planting trees was the perceived need to use the amount of land they had to grow food. “*Some people will complain if you plant trees on fertile land*” (interview respondent, Butobere village, January 1996). This view persisted amongst women whether they possessed one plot or twenty plots of land. A related issue is the possible misperception of the role and value of trees in an agricultural plot. Rural farmers need access to the information discovered through the research efforts of scientists concerned with finding trees that are compatible with crops, assist the growing cycles of certain plants and contribute nutrients to the soil.

Rural women tend to view themselves as resource poor, but able to change their circumstances if they work hard. Mauda’s persistence in trying to generate enough food and monetary income to meet the needs of her family is evidence of this spirit of resourcefulness, hard work and determination to achieve her goals of providing for her family. With these conclusions in mind, it is important to look at the future of Ugandan women in terms of their potential to become the developers of agroforestry initiatives, since the ‘average’ farm women are most likely to be the people who, collectively, can implement agroforestry on a large scale. Women’s attitudes are changing, and they are teaching new attitudes to their daughters, nieces and daughters-in-law.

Understanding these attitudes is key to successful future planning.

The HET model clearly indicates many areas of need for further research. Specific data is required to understand such questions as how much land and resources are being used to care for AIDS patients and pay for funerals?, how much land is sold to finance a drinking habit?, and what are the relationships between land holdings, land use and resource utilization of subsistence rural farmers?

Future planning initiatives and agroforestry programs must acknowledge not only women's roles in agroforestry, but their position of power and decision making control. They need to be treated as the owners of initiatives, not simply as the major participators. There are a large number of women in Kabale that have their own land, make their own decisions, and may be interested in learning about agroforestry. The same applies to women that have not purchased their own land, but have inherited, borrowed, rent or simply exercise decision making power over land they cultivate as part of the marriage agreement. Women that do have land and make decisions over the land they cultivate could be identified and targeted as potential program groups. Potential sources of resistance to planting trees are the general health status of women farmers and the energy they feel they have available for the task. Many of the respondents in this study complained of being "sick all the time" and not having enough strength or energy to work as hard as they could when they were children. Domestic violence can also be viewed as a constraint to development, including agroforestry development, since women in abusive situations will often become isolated from the larger community (McHugh, Frieze, and Browne, 1993). Women that are intimidated and controlled cannot act on their own behalf, nor are they free to bring new ideas home, participate in community events, make decisions and perform actions to

further themselves and their family.

Similar studies undertaken in different locales may assist in identifying women's realities and dispelling common myths about their lives that act to undermine development initiatives by aiming these initiatives at inappropriate target populations. Applying an HET framework, in consideration of women's triple roles, can aid in accurately identifying the factors that may enhance or impede a woman farmer's abilities and willingness to adopt and sustain agroforestry practices.

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