

# 1 Introduction

## Context of this study

The issue of soil fertility decline in sub-Saharan Africa has increasingly attracted the attention of researchers. In most of such studies the problem has been attributed to mismanagement of natural resources by traditional farmers. Socio-cultural aspects are often excluded from the analysis. The way soil fertility decline is perceived and managed by farmers is less understood and is certainly more complex than its presentation by many agricultural researchers.

This study looks at the interaction between socio-cultural and natural or physical worlds and how socio-economic opportunities or constraints facilitate or hinder people's capacity for soil management in Kindo Koysa Woreda in Wolaita, Ethiopia<sup>1</sup>. Diagnostic surveys indicated that farmers perceive soil fertility as a serious constraint for production. Other problems mentioned are low crop yield, population pressure, resource depletion, rainfall variability and erosion risk (FARM Africa, 1992). There have been some attempts to improve soil fertility. One approach has been the use of high external inputs and expensive technology which often disregarded farmers' views. Experience showed that project goals are difficult if not impossible to achieve without the participation of farmers. After all, they are the ultimate decision makers and managers of soils. Hence, an understanding of farmers' views and their soil management practices is indispensable for exploring opportunities for improvement and suggesting more locally informed solutions.

The study begins with an historical analysis which explores how past events influenced the present situation in rural Wolaita. This is followed by an examination of the relationship between social organisation and agricultural practices, especially soil management. Section three outlines how access to land, livestock, labour and cash income influences farmers' abilities to manage soil fertility and their coping strategies. Section four discusses farmers' conceptualisation of soils and management of soil fertility. The fifth section presents farmers' perceptions of changes in soil fertility and their responses and perspectives on the future. Some conclusions and implications of the study for development endeavours are examined at the end.

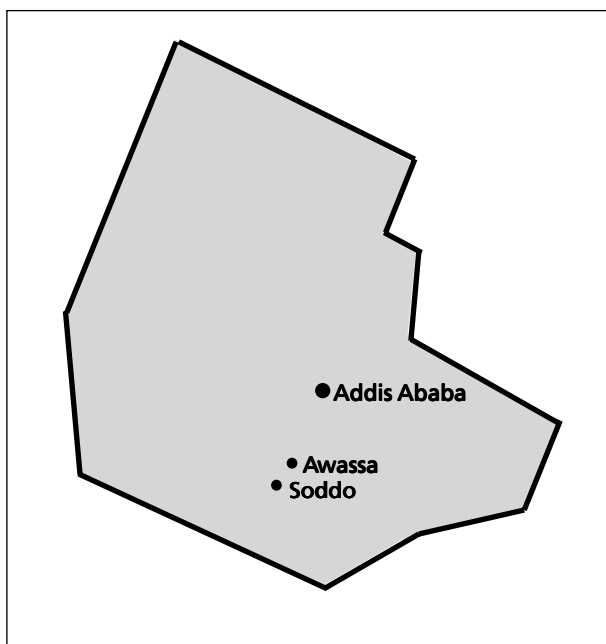
---

<sup>1</sup> This paper is based on DATA Dea, Soil fertility management in Wolaita, Southern Ethiopia: An Anthropological Investigation, Farmers' Research Project (FRP) Technical pamphlet no. 14, FARM Africa. February 1997

## Setting

Kindo Koysha is 42 kms. to the west of Soddo town which is the cultural centre of the Wolaita speaking people. Soddo is located at about 400 km south west of Addis Ababa. According to the 1994 population census, the people of the former Wolaita Awraja number about 1.23 million (CSA, 1996). Rainfall is bi-modal with an annual average for lowland areas of about 700-800 mm and for highland 1100-1300 mm. Soils are predominantly eutric nitosols.

### Map of Ethiopia



The major economic activity is intensive mixed farming, whereby crop production is combined with animal husbandry and off-farm activities. Major crops are enset (*Musa ensere*), maize, teff (*Eragrostis tef*), sweet potato, taro, and others. Teff, coffee, cotton and ginger are the main cash crops.

In Kindo Koysa Woreda three Peasant Associations (PA) were selected for this study. Fagena mata, Fachana, and Lasho PAs represent *gara* (lowland), *bargua* (mid- altitude), and *gezia* (highland) PAs respectively.

**a. Fagena mata** is a lowland PA and its altitude ranges from 800 to 1100 masl. Crops grown include maize, teff, cotton, taro, haricot bean, sweet potato, sorghum, pumpkin, cassava, and chick-pea. Average land holding per household is 5 hectares with a minimum of 2.5 hectares. There is also a large area for communal grazing. Landholding size is exceptionally high because Fagena mata is a resettlement PA established in 1967. It did not attract many settlers mainly because of human and animal disease.

**b. Fachana** is a mid-altitude PA lying at 1600 to 1900 masl. Average land holding is 0.5 hectare with many households owning about 0.25 hectare. Major crops grown include maize, enset, teff, sorghum, pea, bean, barley, wheat, sweet potato, Irish potato, taro, yam, chick-pea, ginger, pumpkin, coffee, and fruit trees. There is no communal grazing area. Cut and carry and tethered feeding are common.

**c. Lasho** is a highland PA with altitude ranging from around 2400-2800 masl. Crops grown include enset, wheat, horse pea, barley, potato, pea, taro, cabbage, tobacco, and Wolaita potato. There are some communal grazing areas.

Land use categories in the lowlands and mid-altitude zone are presented in the following table.

Table 1. Major land use pattern of two of the study PAs

PA/Land use	Agricultural land	Forest/bush land	Grass land	Miscellaneous	Total area (ha)
Fachana	74%	11%	9%	6%	1568
Fagena mata	46%	33%	16%	5%	1782

Source: SOS-Sahel, Kindo Koysa, 1995.

## Farmer selection

The interviewees represent the rich, medium and poor in each PA, with individual farmers selected using wealth ranking exercises. Farmers ranked households using their own criteria and in relation to other farmers in the area. Data have then been collected through participant observation and techniques like transect walks, group discussions and secondary data review<sup>2</sup>.

The rich are those who own relatively larger and fertile lands, have a good house, own ten or more cattle, have off-farm income, generally have surplus products, have a good amount of disposable assets, do not purchase grain for home consumption and have numerous enset plants. The poor are those who own insufficient and infertile land, have large dependent families, own no cattle, are in debt, have no surplus products, have little or no disposable assets, suffer from acute shortage of labour, and are in poor health. The intermediate class is composed of the households in between the rich and the poor.

---

<sup>2</sup> The data for this study were collected during five months fieldwork between July 1994 and January 1996.

# History and social organisation

## Effects of historical events

A look at the past illuminates important aspects of current rural life. The discussion which follows will consider six periods or key events and their effects on environment and agriculture. These are respectively the kingdom of Wolaita (pre-1894), the incorporation of Wolaita into Ethiopian feudal rule (1894), the Italian Occupation (1936-1941), the Wolaita Agricultural Development Unit (WADU) (1970-82), the Ethiopian revolution (1974) and overthrow of the Derg (1991).

### Kingdom of Wolaita (pre-1894)

Before the conquest of Wolaita by the Amhara-dominated force led by Menelik II in 1894, Wolaita had a strong centralised political system. It was also characterised by 'advanced sedentary agriculture' by the standard of the time. The Wolaita used the plough long before their encounter with the Amharas, although it did not have a metal plough point which was adopted from the latter. Pre-Menelik Wolaita appears to have been a golden age for the native people. Wolaita was fertile, wealthy with an abundance of forests, large unsettled areas and a rich wildlife (Chiatti, 1984).

### The incorporation of Wolaita into Ethiopian feudal rule (1894)

This prosperous and fertile country attracted the attention of the then Ethiopian king Menelik. Wolaita was conquered and looted in 1894 following one of the largest military campaigns fought in southern Ethiopia. At the end of the campaign Menelik divided a rich booty, keeping 18 thousand head of cattle and 18 hundred slaves for himself. The invasion and subsequent politico-military administration actively set out to ruin the country for fear that the inhabitants would sooner or later rebel (Marcus, 1969).

What happened between 1894 and 1936 laid the foundation for current levels of poverty. Heavy tribute in the form of grain, labour and severe taxation forced many farmers to abandon their lands and look for tenancy when they failed to meet the tough demands made on them. The general economy of the area faced a serious setback. The huge number of livestock and people taken away from the area undermined the agricultural

base, resulting in lasting stress. Even though this was almost three generations ago, some of the people whose grandfathers were thrown into poverty have never recovered their earlier prosperity.

People's sense of honour and identity also suffered. "The Wolaita's final defeat was devastating in all aspects: socially, economically and politically" (Haileyesus and Menelik, 1995:1). While it is inappropriate to suggest that current problems faced are solely due to the Amhara invasion, it is important to highlight how the loss of people, livestock and other assets affected agriculture and economy in Wolaita, and the southern parts of the country at large.

### **Italian occupation (1936-1941)**

During the Italian occupation the Amhara feudal system was dealt a serious blow. Some of the lands were returned to their previous owners and 'fair tax' substituted for labour tribute and grain demands. However, these changes were short-lived. After the return of Ethiopian rule in 1941 a feudal system was re-established which remained essentially the same until the revolution of 1974.

Between the conquest and revolution, both written sources and informants suggest that farmers were constantly moving, looking for tenancy. A lot of fertile land was left uncultivated or cultivated with little enthusiasm, which discouraged long-term investment in improving soil fertility.

### **WADU(1970-82)**

Wolaita Agricultural Development Unit (WADU) was a World Bank-funded project operational in Wolaita between 1970 and 1982. Its chief objective was the improvement of agricultural production through a wide variety of extension and support services, by using an integrated rural development approach. Activities included the promotion of modern inputs such as fertilisers, improved seeds, and pesticides through credit programmes, the promotion of co-operatives, and training of farmers to use better agricultural practices. The lowland PAs of Kindo Koysha were covered by the WADU project.

The agency also felt that improvements in peasant diet would come from greater consumption of grain crops and reduced consumption of root crops. WADU therefore promoted grain crops while trying to reduce the production of enset and other root crops. Increased income for the family was to come from cash crop production, although the potential was limited. The agency's programme emphasised land conservation through bund construction, gully control and rehabilitation of vulnerable soils through large-scale reforestation. Later, livestock breeding and protection and infrastructure building such as rural access roads and water development, were also included (Dessalegn, 1992).

In terms of land conservation initiatives, road building and promoting modern inputs, WADU's achievements were considerable. However, they were not sustainable because they were based on heavy external inputs. In terms of raising agricultural production and food security, results were disappointing, partly because WADU planners did not anticipate events such as the revolution, and the damaging rural policies that accompanied it.

When WADU phased out, fertiliser subsidies were reduced and fertiliser prices augmented. Service co-operatives continued to supply agricultural inputs on credit but service delivery became poor at the end of the 1980s. However these service co-operatives remained the only way for obtaining fertilisers on credit. Recently they have been reorganised and strengthened. Farmers who experienced increased yield with adequate fertiliser supply during the WADU period believe that soil fertility has decreased, as yields have gone down (Eyasu, 1997).

### **The Ethiopian revolution (1974)**

The first few years of the revolution were highly destructive to the environment of Wolaita. Damage to the forests was partly symbolic and directed towards their previous exploitative and oppressive owners. Farmers, who previously were deprived of access to these forests cleared as much forest as possible for cultivation. Moreover, since they were not sure whether the changes would be lasting, people rushed to clear as much land as possible while they could. After a while houses were built in the newly cleared areas which also changed settlement patterns.

Land reform was one of the most radical policies implemented after the revolution. Because there was little unused land available for redistribution in Wolaita, land reform involved alienating land from those who had bigger holdings (Dessalegn 1984, Pausewang, 1983, 1990). PA leaders were empowered to redistribute land and old feudal landlords lost their land base. This land reform was associated with many problems. Among others, informants stressed, the PA officials were corrupt and land was not fairly distributed.

A negative impact of the land reform and subsequent policies is that they changed people's perception of land. Ato Shameru, 84 year old informant from Lasho PA, indicated that in Wolaita land used to be viewed as the most important asset which every father tried hard to leave for his sons. As he put it "*Land was an eternal property, it never died unlike livestock; it was never stolen by thieves unlike cash*". After the land reform people learnt that land was no longer 'eternal property'.

Haileyesus and Menelik (1995:1) argue that the land reform of 1975, and the subsequent policies of the military government, profoundly exacerbated the vulnerability of the economy by striking at the root of the system of production. Periodic re-allotment of

land, and the imposition of 'villagisation' and producers' co-operatives, were resented by the people and also created uncertainty and apprehension. Added to these were very high rates of taxation and grain requisitioning by the government which had to be delivered by the farmers whether the harvest was good or not.

Villagisation was particularly catastrophic for the farmers in Wolaita. It meant that they had to destroy their enset and coffee stands which require many years to mature. They had also to abandon their homestead or *darkua* land - which is the product of many years' of investment in soil fertility. It also discouraged farmers from any further investment in soil fertility, planting of trees, enset or coffee.

## Overthrow of the Derg (1991)

Towards the end of socialist rule in March 1990 a 'mixed economy policy' was declared. This was understood by farmers as a right to sell land, and a lot of people (especially the poor) did so. The new EPRDF government declared that a previous regime's policy had changed and people looked motivated. Villagisation was reversed, and people went back to rebuild their *darkua*, enset, coffee, trees, etc. However, the question of land policy remains unresolved (Dessalegn 1995).

The memory of the Derg's insecure land tenure policy is still fresh and the fear of land redistribution haunts the minds of many farmers. During fieldwork many farmers expressed their worry and said that they were not sure of the EPRDF government's land policy. When asked how they care for their soil they said "*it seems a rope will draw a line on our land once more which is killing our morale to invest in soils*".

## Natural events

In addition to the socio-political changes described above some natural events had important implications for the rural economy, labour availability and soil fertility management. These are coffee berry disease (CBD), trypanosomiasis, drought (major ones in 1984 and 1994), enset bacterial wilt, sweet potato butterfly, and human disease events. The detailed analysis of causes and effects of each of these is beyond the scope of this study. Their implications for soil fertility management are that they caused increased death of livestock, human ill health, and a collapse in the production of key crops that are essential for livelihoods in Wolaita.

# Social organisation

## Household

Wolaita households are formed around a nuclear family and (sometimes) other kin or fostered individuals. Yet they always consider the patrilineal parents as members of the broader family resulting in strong ties between households. Average household size in



Wolaita is between 5 and 9 persons (FARM Africa, 1992; Dessalegn, 1992; Berhanu 1995). Richer households have larger families (FARM, 1992; Kindness, 1994) and thus more labour for timely discharging of agricultural work as well as more opportunities for off-farm activities.

The dependency ratio (percentage of people below 10 and above 60) is over 40% (Dessalegn, 1992; Berhanu, 1995). The percentage of people below age 18 varies between 56% and 65%. and indicates the likely high demand for future land holdings (Dessalegn, 1992; Berhanu, 1995).

Usually, a husband consults his wife over major decisions, although the final decision is generally made by himself. Major decisions in the household which have an impact on soil fertility management include: which field to manure; which crops to be inter-cropped; which crops to rotate; what amount of fertiliser to purchase and where to apply it; which animal to sell and so on. Women play a significant role in the execution of some of these tasks. For instance, if it is decided that a certain plot of land is to be manured, the women and children carry manure to the plot. It is very important that the women are convinced of the benefit of manuring, otherwise there is always room for misuse of the manure.

## Settlement Pattern

Settlement patterns have undergone enormous changes. In the past, when there was no land shortage, homes used to be established at some distance from each other. *"Each morning the people looked out across the forest to see if smoke was still coming from their neighbour's house to ensure that they had not been attacked by wild animals during the night"* (Ato Altaye, Fachana PA). At that time, a headman would build his house in the middle, and other houses would encircle his house and have a common front yard. Tenants and slaves put their huts on less fertile edges so that the land would become enriched through their work.

The most notable change took place after the 1974 socialist revolution. Village leaders lost their social prestige and were termed *adhari* - oppressor, or expropriator. The forest areas owned by landlords were cleared and houses were built anywhere in these new areas. All the tenants, slaves and other low caste occupational groups became land holders and built distinct boundaries, even establishing front yards. This was reinforced further by land reform which entitled every household to land ownership.

The old socio-political norms which used to govern home site selection were thus no longer operational. This changed not only settlement patterns but also village structure, such that households became independent. The villagisation programme tried to change this but did not last long. Almost all 'villagised' settlements were destroyed and people went back to their previous areas after declaration of the mixed economy policy in 1990

by Mengistu. This was understood by many as a major policy change by Derg including the abolition of villagisation.

## Kinship

The Wolaita are composed of several patrilineal clans having different social status. Historically, membership of a clan determined to a large extent eligibility to inherit land, local political alliances and ritual celebrations. Economic co-operation between clan members has been weaker than political, social and ritual ties. Thus ploughing together, trading together, or any other economic co-operation depends more on geographical proximity, mutual trust, and other factors than consanguinal kinship ties. However, under crisis situations clan members are supposed to co-operate and help each other. Besides the lineage ties and marriage there are other ways of building social relationships such as 'eye-parenting', god-father and father-confessor. These complex forms of social bonding have strong implications for share cropping, confinement of animals, labour exchange and social security during crisis.

## Marriage

Wolaita society values marriage highly and all parents are eager to see their sons and daughters married and bear children. All Wolaita clans are exogamous and marriage represents an important way in which networks of social relations among various clans are established. Both monogamy and polygamy are practised depending on religion and economic status. Rich men, Orthodox Christians and traditional believers marry several wives more frequently than Protestants and poor men. The expenses related to marriage are one of the major reasons for the sale of livestock and land. Many parents enter into crisis after they celebrate their son's or daughter's wedding which hampers the socio-economic condition of many households in Wolaita.

## Religion

In Kindo Koysa the major religions are Protestant (with a multitude of sects), Catholic, Orthodox and traditional beliefs. Protestantism is expanding at an unprecedented rate in Wolaita. One of its apparent attractive aspects for many rural people is that it provides a less expensive way of conducting social affairs and a route out of difficult taboos, rituals, costs of marriage and funeral ceremonies. It also serves a psychological function as a source of hope for the people who tend to despair because of their extreme poverty.

There is a growing and fierce competition between the followers of these religions which is seriously affecting social co-operation and networking. Particularly relevant in the context of this study, is the role religion plays in giving causal explanations for the current agricultural crisis. There is mutual blaming between followers of different religions at a local level. Protestants blame Orthodox followers and traditional believers for not relying entirely on God, while traditional believers accuse the Protestants of destroying ritual sites of ancestors and dense forests where the spirits live.

## Social security, savings and investment

Every household belongs to one or more of these local voluntary associations for mutual support. Dessalegn (1992) holds that such mutual support networks help reduce the suffering of the poor, provide a life-line in times of crisis, and keep up the hopes of the needy. Hence “the poor tend to invest in tradition more than others, are more active in customary activities, social organisations, and observe traditional life cycle occasions such as births, wedding, deaths, etc. more seriously” (Dessalegn, 1992: 26).

Traditional saving schemes and local banking are also widespread and help people to save bit by bit. When they receive their deposited share or get any significant amount of money they tend to invest in livestock. Unfortunately, more recently, livestock diseases have made such investment more risky. Before the land reform, according to some older informants, the ultimate objective of any saving was to invest in land. Land reform eroded this and meant that those seeking to acquire larger land holdings were considered reprehensible. This was mainly because buying and selling land was illegal in Ethiopia. After the seizure of power by EPRDF, the rich farmers were identified as the exploiters of the poor which also tainted the act of land buying. At this point, people turned to livestock as an investment.

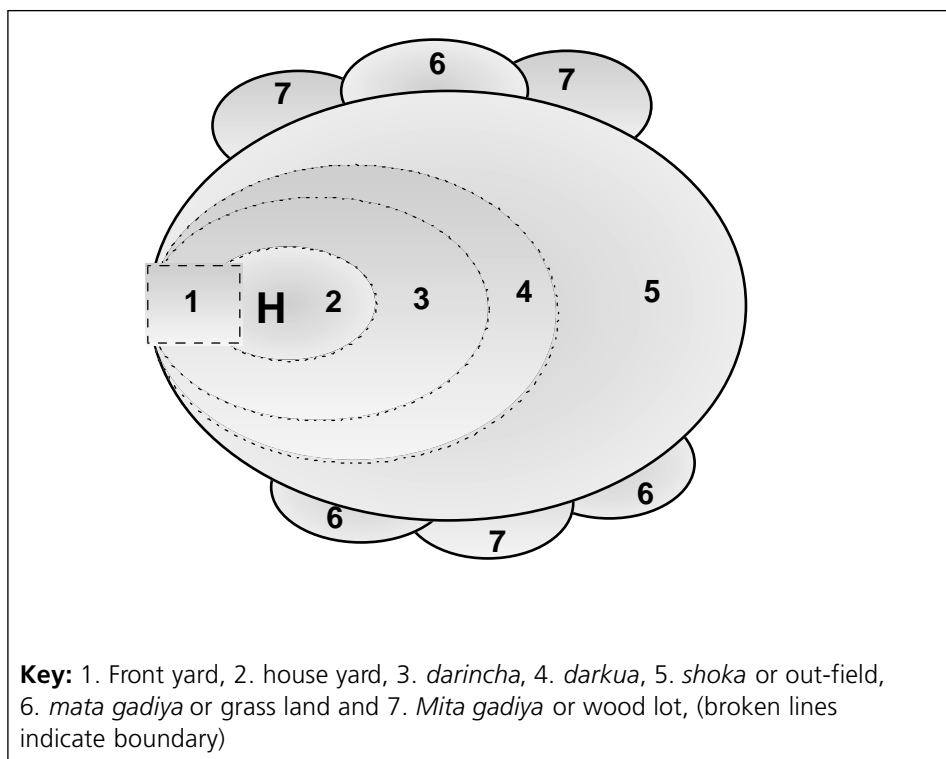
Production factors comprise land, labour, livestock and cash income, all of which are crucial inputs to soil fertility. This section explores access to these and how each is affected by local institutions and social networks.

# Factors of production

## Land use

The land of an average highland Wolaita farmer is divided into seven types of land. This traditional land use scheme in Wolaita can be portrayed diagrammatically as follows (Figure 1).

Figure 1. Diagram of indigenous land use pattern in Wolaita



**Ketasa (house yard)** is the place where the house is built.

**Karea (front yard)** is used for social gatherings and also serves as a grazing area. Its size is decreasing, since some have started to include a portion of this as crop land while others have fenced a part of the area and use it for cutting and carrying of grass. In Wolaita culture *karea* is highly valued as a status symbol.

**Darincha** is a tiny plot next to the house which is used by women to grow spices. The boundary between *darincha* and *darkua* is not strict.

**Darkua (back yard or garden area)** is a key area in Wolaita land use patterns. The term *darkua* includes the land in *darincha*, *darkua* and also some land from the *shoka*, as long as it is manured. It is located relatively close to the house and thus receives its refuse and smoke. The most important crops grown in *darkua* are enset, taro, coffee, and maize. Since this is the most fertile and productive part of the land, every farmer keeps on trying to expand his *darkua*. The success depends on the varying availability of labour, manure and other organic inputs. Hence, the boundary between *darkua* and *shoka* is characterised by contraction and expansion.

**Shoka (out-field)** - This is the larger field where people grow various cereals, root crops, grains and others. Crop rotation and fallowing are used to enhance the fertility of the *shoka* field. In the past, farmers also used to apply some manure and fertiliser provided by WADU. In the lowlands during the time of WADU, a lot of fallow and forest land was cleared and cultivated with the aid of tractors and so the *shoka* expanded. Since the phasing out of WADU the *shoka* has been shrinking and most farmers have been forced to leave some *shoka* fallow because of oxen shortages. They are also trying to expand their *darkua* through increased imports of manure, because fertiliser is not as easily accessible as in WADU's time.

**Mata gadiya (grassland)** - On the outskirts of their holding most farmers have a plot which is used for grazing, tethering and cut-and-carry grass.

**Mita gadiya (woodlot)** - Often *mita gadiya* is the outermost plot where people plant eucalyptus and other trees. *Mita gadiya* also demarcates the boundary of the holding. Most farmers have all these types of plots, though size of each differs across economic classes. Richer farmers have larger *karia*, *darkua*, *mita gadiya* and *mata gadiya*.

In terms of fertility, farmers view *darkua* as the most fertile part and the first priority, *shoka* is second while the fallow or *otta* is last. Farmers try to transform their soil from *otta* to *shoka* and then to *darkua*. *Darkua* areas remain the most fertile, even when used continuously for generations without fallowing, as long as they continue receiving household refuse and manure. This is in contrast to the soils on *shoka* land which may decrease in fertility after a few years of use (see also Eyasu, 1998).

During the time of WADU root crops were discouraged. Farmers no longer bothered to expand their *darkua*, since they had enough fertiliser supplies through WADU. As a consequence *darkua* decreased in mid-altitude as in the lowlands in this period. The highland farmers, however, stated that some twenty years ago the size of their *darkua* was much more than it is now because they had a lot of enset (50-75% of land). Due to enset bacteria wilt, the enset area has shrunk and the plot has been used increasingly for growing cereals. Still, the total *darkua* area has increased over time, mainly because there are more people and more houses.

In mid-altitude areas, where land shortage is most pressing, uncultivated *otta* land has decreased steadily and at present there is almost no new land to be cultivated. People are trying to open up small uncultivated areas (from front yard, grassland, wood lot and marginal land, such as river banks). Currently, in all the three zones, every household's primary goal is to expand the *darkua* but shortage of livestock and labour create bottlenecks.

It is tempting to conclude that soil fertility is increasing at an aggregate level because there is now more *darkua*. However, *darkua* areas are not increasing as much as farmers would like. It needs a lot of input to expand *darkua*, and this is not easily secured. Hence, in all the three zones, the boundary between *darkua* and *shoka* is characterised by a moving frontier, particularly for the poorer farmers, as their resources are meagre and variable.

## Land tenure over time

The problem of land shortage is extreme in highland Wolaita, where average land holding is less than 0.5 hectare per household, many people are landless, and population density in some parts is higher than 500 persons per km<sup>2</sup>. In Wolaita, as elsewhere in rural Ethiopia, land is an extremely important asset, for both economic and social status. Land tenure is thus critical, but has historically been subject to much variation. Before the incorporation of Wolaita into feudal Ethiopia in 1894, land was owned by both the king of Wolaita and individuals. Ownership was through inheritance, purchase and gifts from the king for loyalty and 'noble achievements'. There was complete tenure security; owners had a full right to own land, sell it or leave the land to anybody they liked.

This tenure was substituted by the *gult* system after incorporation in 1894. This system remained essentially the same until the 1974 revolution into Menclik's empire, except for the brief period of Italian occupation. Under the *gult* system Amhara soldiers and administrators were rewarded with land rights in the conquered areas and each farmer was then assigned to an Amhara administrator or soldier. Heavy taxes and tributes of grain and labour were demanded from the farmers. Failure to comply resulted in eviction

from the land and/or imprisonment. During this period of feudal rule most farmers had insecure access to land because they might be evicted when unable to pay the taxes.

As a result, a lot of people were forced to look for tenancy elsewhere. Tenants were always unsettled, often having to change their place of living. Tenants therefore had little incentive to conserve the resource base, since they did not know when they would have to move on.

After the Italian occupation, Haile Selassie instituted the payment of taxes directly to the government and legally recognised the tax-payer as land owner. But still the majority of the farmers did not benefit, "Again farmers were not aware of the significance of legal changes. Their terms of contribution were not affected. But those who collected taxes had them registered in their own names, thus buying official recognition..." (Pausewang, 1990).

The 1975 land reform abolished the feudal *gult* rights and 'land was distributed to the tiller'. Every household was entitled to usufruct rights in land. However, there are contradicting accounts of its redistribution and sharp criticism of the way it was managed. In particular, the threat of forced villagisation in the 1980s again increased land tenure insecurity. This was a serious handicap for soil management and agriculture in Wolaita, where people have to invest for decades to establish their *darkua* and depend on its perennial crops.

## Access to land

In present day Wolaita, inheritance and share-cropping are the most important means of gaining access to land, although contracting and purchasing are additional means of land access, predominantly for richer households. Table 2 shows the changing means of access to land over time.

Table 2. Various means of access to land in Wolaita

Means/Period	pre-1894 (Wolaita kingdom)	1894-1974 (Amhara rule)	1974-1991 (Socialism)	1991-present (EPRDF)
Inheritance	✓	✓	✓	✓
Purchase	✓	✓	X	X
Gift from king	✓	✓	X	X
Tenancy	?	✓	X	X
PA allocation	X	X	✓	X
Share-cropping	?	✓	✓	✓
Contracting	X	X	X	✓

Key: ✓ = operational; X = not operational; ? = not sure of the existence or the form

Throughout all historical periods **inheritance** has been the most important way for obtaining access to land. Nowadays, inheritance is undergoing some change. Though most parents still allot a plot of land to their sons who are forming their own household, some parents, due to land shortage, have started to refuse to allot plots, telling their son to request land from the government.

**Purchasing land** was a very important route to owning land until it was legally prohibited since the early days of the revolution. However, under the guise of the social institution of *kotta* (share-cropping) or the legal cover of 'contract', selling and purchasing land has remained common in Wolaita, especially from the late 1980s onwards. A significant number of poor households have sold a portion of their meagre plot. To make matters even worse, the price of land has been low because sales were, and still are, illegal. The major reasons for selling land include: covering costs of weddings and funerals, purchasing food, medical costs, paying tax and other contributions.

**Gifts** from kings or clan leaders used to be an important means of obtaining land under both the kingdom of Wolaita and Amhara rule. After the revolution it took the form of PA allocation. The similarity between the two is that under both systems loyalty to the state and leaders counted. Also corruption was common in both. However, the difference is that under the socialist system, poor and landless people could be allocated some land, while under the feudal system only wealthier people tended to be allocated land. PA leadership continued to allocate land (especially the land owned by the PA) during early days of the EPRDF government, but now they have no more land to allocate.

There have also been various social arrangements through which people gain access to land without owning it. The first one is **tenancy** which was very important, particularly during the period between 1894 and 1974. Tenancy involves a patron-client relationship, whereby the tenant gives much of his produce to the owner of the land and contributes labour. In return, the land owner pays the land tax and protects the tenant and his family.

Another form of social arrangement is share-cropping or *kotta* which has been common in Wolaita for at least the last hundred years. The relationship in *kotta* is much more than simple material exchange. Kinship, friendship, moral obligations and strengthening social relationships are also potent in motivating people to enter into *kotta* agreements. The *kotta* system is very important in helping the needy or bringing owners of insufficient resources together.

There are two practices. The first one is **share-cropping** whereby the land owner gives land and all other inputs are covered by the share-cropper. They share the produce equally after the share-cropper has deducted the cost of fertiliser and seeds. The second practice is **share-farming** whereby the land owner provides land and one or more of the other major inputs (oxen, labour, fertiliser, seed). In this case, they share the produce



equally. It seems that share-farming used to be more common in the past when demand for land was not so high and the owner of the land had to attract a person to share with. At present, share-cropping tends to be more common and landless people have started to compete for these arrangements.

While the share-cropper mainly tries to maximise production the land owner prefers those farmers with a reputation for good management of the soil. Informants say that share-cropping used to be bad for the soil in the past. At times land-owners took part in cultivation, with the pretext of helping, but actually supervising the management of the soil. This is no longer the case and share-croppers themselves have started to be concerned about the soil resource. If they fail to do so the agreement may be terminated for the next season and the land will be given to another farmer. Since it is not easy to get land for share-cropping, most do not want to lose it. These days, management of the soil is a major bargaining point for those who seek land for share-cropping.

**Contracting** land on a monetary basis for a specific period of time is a recent phenomenon, having spread especially after the March 1990 mixed economy declaration.

## Labour

In the past various types of work parties were very important as sources of labour. However, a steady decline has been observed in their contribution: "In 1910 about 75 percent of labour was provided in work groups. This declined to about 45 percent in 1967, 39 percent in 1977. Now it is about 20 percent" (Haileyesus & Menelik, 1995:5). Most farmers believe that these work parties were important in enhancing soil fertility. This is related to their conviction that cultivation by hoe enhances soil fertility (see Dea, 1997 for more details). As noted earlier, current religious expansion is redrawing almost all important social boundaries, including work group organisation and labour sharing. Protestantism in particular, discourages relationships with non-sect members.

Nowadays, the most important sources of labour are household labour and wage labour. Almost all the poor and medium households depend on household labour for ploughing, weeding, harvesting and threshing. Boys at the age of ten or twelve start to participate in agricultural activities while richer farmers can afford to employ wage labour.

Both rich and poor households face labour shortages. Among the reasons for labour shortage are out-migration, weakening of indigenous labour organisations, unfavourable attitudes of the younger generation to working on the farm, and poor health conditions. Schooling, as many parents complained, also takes much of children's time thus inducing agricultural labour shortages.

Such shortages are particularly acute among poorer households as they rent out their labour, even when not having enough for their own work. The rich have the capacity to make up for the shortage through oxen rental, wage labour, and the hosting of work parties. Analysis of the age composition of the Wolaita population gives further insight into the labour situation. As discussed earlier, the age structure of the population is highly skewed with a sizeable proportion of the population (i.e. 40%) being either under ten years old or over 60.

Share-farming, lending out livestock to others, and inter-cropping are some of the strategies employed by farmers to combat labour shortages. If a certain household cannot find the labour needed to work on his land he may rent it out for share-cropping.

In relation to soil fertility management, labour shortage results in wastage of dung when transport is no longer possible. Labour shortage also constrains composting. For instance, farmers in Fagena mata complained that they could not practise composting for they cannot afford the time to dig the pits nor carry the heavy compost to the field. Soil conservation strategies may also suffer because people cannot afford labour. Farmers know that stone or soil bunds reduce erosion and enhance soil fertility, but many cannot undertake these because of labour shortages.

## Livestock

Livestock have always been part of Wolaita agriculture. Pastoralists pre-dated agriculturists in Wolaita's history. In Wolaita animals live in the same house as their owners, and are managed carefully as they are greatly loved. Shortage of grazing is mentioned by some farmers as limiting livestock production in highland Wolaita.

Often wives and children are responsible for the management of cattle. They are supposed to clear the livestock pen, cut and carry grass, water the animals, tether animals where they can graze well and if a wife fails to discharge this responsibility properly it may cause conflict in the house, which may lead to divorce in extreme cases.

Cattle are kept for multiple purposes such as sources of draft power, manure, cash, food, and as a status symbol. People in the medium and rich classes own cattle, while most of the poor have none. The poor have some access to livestock through arrangements with the owners such as joint-ownership and confinement as well as borrowing of oxen for draft power<sup>3</sup>. All of these arrangements are based on kinship ties, marriage bonds, church affiliation, and other social networks. They give opportunities to the poor to gain access to manure, draft power and dairy products without necessarily

---

<sup>3</sup> One interesting innovation in this regard was a single ox, horse, or cow plough method innovated by Ato Afework Gebre-Sellasie (Areka woreda). What is surprising and puzzling is that though Afework claims that this is very efficient and that his innovation was well advertised some twenty years ago (Abraham, 1973) no other farmer has adopted this.

owning the animals. However, not all poor farmers succeed in obtaining livestock through these arrangements.

Access to livestock is important for soil fertility management and a pronounced difference is observed between the soils of farmers with and without many cattle. Dung is vital in *darkua* field management. Livestock is also a source of cash for purchasing inputs and for hiring wage labour, and of milk and butter which is important for a healthy labour force.

## Off-farm income

Income from off-farm activities is often important for accumulating wealth. Most richer farmers earn income from off-farm activities, in addition to the sale of agricultural products. For instance, Ato Boshe states, *“among 25-30 rich households in our area, there are only two who depend on farm income alone. All others somehow obtain additional income from off-farm activities”*. However, the poor depend even more on off-farm income especially in years with a bad harvest. One household survey concluded that in a good production year, the poor obtain 39% of their cash income from agriculture which goes down to 11.4% in a bad production year (Kindness, 1994).

Trading is an important source of off-farm income. As early as 1900 there were advanced market transactions in Wolaita. In Kindo Koysa there are now big weekly and small daily markets. There is a significant difference between the rich and the poor with respect to trading as a source of income. The rich are engaged in relatively large-scale profitable trading to augment their general economic level. The poor participate mainly in subsistence petty trading simply to cover their daily expenditures. Lack of capital and trading experience limit their possibilities to make a profit from trading. Credit facilities and training support can increase the capacity of the poor which in the long run, may help relieve the pressure on the land.

# 4 Farmers' conceptualisation of soils

## Wolaita farmers' perception of soil fertility

There are two basic Wolaita concepts which are used to address the fertility or infertility of soils. These are *arada* (fertile) and *lada* (infertile). Table 3 lists the characteristics of both types of soils.

Table 3. Farmers' perception of soil fertility

<b><i>Arada</i> (fertile soils)</b>	<b><i>Lada</i> (infertile soils)</b>
on gentle slope deep top soil black rich fat strong manured near house hoed	on steeper slope shallow top soil red poor thin weak not manured far from house ploughed

*Arada* is perceived as a deep black soil found on gentle slopes which is not easily washed away by erosion and holds water. By contrast *lada* is a shallow red soil found on steeper slopes which is continuously washed away and so does not hold water. Farmers talk of *arada* soils as fattened (as for cattle) and *lada* soils as skinny or bony. They also compare *arada* soil to a rich and *lada* soil to a poor person: one with and one without the nutrients required for growth.

Some farmers also metaphorically talk about soils in relation to the life-span of living organisms. They consider soil as something that grows, matures, gets old and even dies. According to Ato Toma, an old soil is "*one which, as a result of continuous use*

*without proper management, became tired*". People also talk of a dead soil referring to a completely ruined soil where even grass does not grow. They think that trying to enrich a dead soil, is not worthwhile.

*Arada* and *lada* are also contrasted in terms of crucial inputs like manure. *Arada* is well manured whereas *lada* is not sufficiently manured. Its location relative to the house will also influence the application of manure and house refuse. Further, farmers believe that smoke from cooking in the house is good for soil fertility, as well as for crop growth. In addition, farmers think that cultivating with a hoe maintains the fertility of the soil, whereas ploughing ruins the soil fertility.

Local perceptions of soils have important management implications. For instance, if a soil is perceived to be 'sick', it needs 'medicine' i.e. *talia*, chemical fertiliser. Whereas, if a soil is perceived to be 'tired' or 'old' it can be 'rejuvenated' by adding manure and household refuse. The perception of the extent to which a soil is 'sick' or 'tired' determines the amount of fertiliser to be applied. However, the fertile/infertile dichotomy is not an all or nothing situation. For instance, management is based on farmer's opinion of the soil's degree of darkness and healthiness.

Farmers' perceptions of *arada* and *lada* are thus influenced more by management and location and less by the inherent property of a soil. Farmers strongly believe that, as a result of management factors (to be discussed later), all soil types can be transformed from *arada* to *lada* and vice versa. Soil fertility is therefore seen as a dynamic phenomenon.

## Farmers' classification of soils

Table 4 summarises information on soil types and their major characteristics in different places<sup>4</sup>. Farmers distinguished 7 different soil types in the three case study PAs (see also Dea, 1997). A close examination of farmers' classification and characterisation of soil types gives some idea about the criteria that farmers used. The most important ones are: colour, fertility, land type, and depth of top soil. Characteristics such as slope, water holding capacity, ease of tilling, physical properties like stickiness or firmness are also used. The natural fertility of a soil only indicates its potential. The actual fertility status of the soil is also determined by its location and management.

What farmers ranked as the best soil is what they consider as a naturally fertile soil, which requires little effort to enrich. Often this is an easy soil to work which gives a high yield. Soils in the next rank are those which are considered basically fertile, but not as rich as those in the first category and more labour is required to enhance their fertility. Soils in the third category are those which are basically infertile although easy to work,

<sup>4</sup> Only farmers' typology of soils and their characterisation are described here. The comparison of farmers' classification with that of soil scientists has been carried out by SOS-Sahel in collaboration with FARM Africa and Awassa Research Centre (see Ejigu et. al., 1997).

Table 4. Farmers' Soil Classification, Fertility Ranking and Crop-Soil Association

PA	Wolaita Soil Name*	Colour	Fertility**	Soil Depth***	Other Properties	Crop Preference
<b>Fagena mata (Low-land)</b>	1. Gobua	red	F	D	-	Maize, Teff, Sweet Potato, Taro, Sorghum, Cotton
	2. Gorbua	black + grey	F	D	heavy	Same as Gobua
	3. Charia	grey + black	M	D	marshy	Teff, Taro, Maize, Bean, Sweet Potato
	4. Tala	red + grey	I	S	sticky	Bean, Maize, Teff
	5. Ancho shafia	-	I	S	sandy	-
	6. Bokinta	white	I	-	marginal	-
<b>Fachana (Mid-altitude)</b>	1. Gorbua	reddish black	F	D	withstands sun heat	Enset, Maize, Sorghum, Pea, Barley, Wheat
	2. Gobua	red	F	D	needs much rainfall	Maize, Teff, Sorghum, Pea, Enset, Coffee, Maize, Teff, Sorghum, Sweet Potato, Taro, Banana
	3. Tala	black or red	M	M	sticky	Taro, Banana
	4. Charia	black	M	D	marshy	Sorghum, Pea, Enset, Irish Potato, Taro, Coffee, Ginger
	5. Barta	greyish white	M	S	light, conserves moisture	Yam, Sweet Potato, Cassava, Pea
	6. Bokinta	white	M	S	-	Coffee, Taro, Pea
	7. Anchua	sandy	M	-	light	-
	8. Bara	bright red	I	S	-	-
<b>Lasho (Highland)</b>	1. Kareta bita	black	F	D	easy to work	Enset, Cabbage, Pea, Bean, Wheat, Barley, Irish Potato
	2. Gobua	red	M	M	light	Enset, Bean, Pea, Irish Potato
	3. Tala	reddish black	I	S	sticky	Wolaita Potato, Irish Potato, Barley, Pea, Enset
	4. Charia	black	n.a.	D	marshy	Taro
	5. Bokinta	white	I	S	stony	-

\*Soil type = In order of importance, \*\*Fertility F = Fertile; I = Infertile; M = Medium; n.a. = not available; \*\*\*Soil depth: D = Deep; S = Shallow M = Medium

and can be transformed only by investing much work. Soils in the last category are those soils which are infertile and yet very difficult to fertilise, because either they are already 'dead' or very hard to work.

## Crop-soil association

Based on their knowledge of characteristics of different soil types and the performance of each crop, farmers match different soil types with different crops. As indicated in Table 4, in each zone the most important crop is associated with the best soil, like enset in Lasho and Fachana PAs and maize in Fagena mata PA. There are cases where crop-soil association is similar across agro-climatic zones. For instance, *charia* soil is associated with taro in all three PAs. Richer farmers are able to find a better crop-soil match than the poor. The rich have either a large plot of land or they obtain access to more suitable soil types through *kotta* or share-cropping.

## Local soil management practices in Wolaita

Wolaita farmers understand soil fertility as dynamic and various soil management practices are used to maintain and enhance soil fertility. Some of these practices are discussed below.

### Improving fertility

**Manuring:** This refers to the application of cow dung and household refuse to the farm land and is practised in all three PAs. First the farmer identifies the specific site where the manure is to be applied, because it is impossible to fertilise all plots at the same time. The manure is stored on the selected plot of land, for more effective distribution and to avoid wastage. Ideally, the stored dung is evenly distributed the day before the farmer ploughs the plot. During ploughing or hoeing the manure is buried for quick mixing with the soil, easy decay and to ensure protection from being washed away by erosion. However, field observation shows that there are a notable number of farmers who do not follow this pattern and simply dump manure and household refuse next to the house without spreading afterwards. A significant amount of dung is also lost when the cattle are grazing in communal pasture areas. However, in the mid-altitude PA cattle are tethered most of the year on the farmer's own land and the dung collects there.

**Cultivation with a hoe:** Most informants in all the three PAs believe that cultivation with a hoe is much better than ploughing for maintaining and/or enhancing soil fertility. However, hoeing is predominant only in Lasho today. The Lasho farmers insist that their crops (enset, beans, peas, barley) give higher yields if sown on hoed land. In addition, they consider slopes in their area unsuitable for ploughing, and they hold that ploughing may turn up the infertile subsoil.

**Crop rotation:** People all over Wolaita practice crop rotation, though there are differences across the climatic zones. Crop rotations are combinations of cereals, root crops and types of beans. In Fagena mata cotton is also part of the rotation. Crop rotation systems are complex because of the practice of double cropping, relay cropping and inter-cropping.

Farmers' views concerning inter-cropping differ. Some say that crops compete, others argue that crops co-operate and support each other. Still others say that inter-cropping is bad for the soil, because it is like a "*mother's breast feeding multiple births*". Experiments carried out by WADU in the 1970s found that inter-cropping was possible only on small, garden-size plots while inter-cropping at farm level led to lower yields and unhealthy growth for stalk plants (WADU 1979, Dessalegn, 1992). However, no extensionist will succeed in convincing the Wolaita farmers to stop inter-cropping. The issue should be which crops perform well when inter-cropped and under what conditions.

**Smoke from the house:** Some farmers argued that soils around the house are always kept fertile because of the smoke from cooking and the regular application of house refuse and dung. Therefore, they choose a new house site to be on a *lada* (infertile) plot so they can continue this process of soils improvement.

**Use of crop residue:** Farmers in some PAs leave the residue of certain crops on the farm land to add to its fertility. In Fagena mata, they do not need to use the residue of maize for fuel or animal feed as they do not suffer from shortage of land, fuel wood, or grazing. In Lasho, farmers leave the residue from enset on the field. In Fachana farmers remove all crop residues to prepare the land for subsequent cropping and use these for cattle feed, fuel, and construction.

**Leaf litter:** The leaves of some indigenous trees such as *mokota*, *anka* and *kosua*, are believed to add fertility to soils. Some tree species can be grown on the farm so that the leaves can be used on a regular basis. Others are not allowed in the fields because their roots are believed to drain soil nutrients away. Thus their leaves are collected from woodland areas and carried to the farm.

**Application of chemical fertiliser:** Except in Lasho, most farmers use some chemical fertiliser. Lowland farmers depend more on it than those in the mid-altitude areas. The lowlanders believe that their soil does not yield well without fertiliser. Lasho farmers have always refused to apply chemical fertiliser because 1) they feel that their climate is not warm enough for fertiliser; 2) they believe that their crops (enset, beans, peas etc.) do not need fertiliser; and 3) they fear that fertiliser may spoil their soil for they heard of such adverse effects elsewhere. The rich and intermediate farmers somehow can afford the cost of a limited amount of fertiliser. Usually the poor acquire access to fertiliser through share cropping arrangements.



**Composting:** Composting has been advocated by extension workers in Fachana and Fajena mata PAs but has not been taken up. In both PAs, labour shortages for digging the pits and carrying the compost were mentioned as constraints. In Fajena, farmers also reported that they tried compost but it failed, partly because of termites. In Fachana farmers do not prepare compost because they lack raw materials, such as leaves and grasses.

**Fallowing:** All farmers in the PAs of this study know that fallowing can improve soil fertility. However, the scarcity of land does not allow them to practise it, except for a few in Fajena mata PA, where land shortage is not a problem.

### Controlling erosion

**Kella** is a traditional stone terrace or bund made out of heavy rocks and constructed on private plots. It is common in the hilly areas of Fachana, Lasho and the surrounding highland PAs. In Lasho PA *kella* is constructed by work parties with help of experts on *kella* building. Farmers are confident that it protects their soil from erosion and enhances soil fertility. *Kella* construction, however, requires physical strength, much labour and knowledge of the technique. *Kella* has to be repaired every three to four years.

**Zerua** is a traditional terrace made up of soil bunds built often at the edge of the farm land. The difference with *kella* is the site of construction, the material used, and the amount of labour required. *Zerua* building is easier than *kella*.

**Drainage ditches** are opened at the edge or even in the middle of the plot, so that flood water runs away, without affecting other parts of the plot. These were observed in all the PAs of this study. The logic behind this is that it is impossible to block erosion totally. Soil and water management through bunds or ditches thus brings about controlled soil siltation between farmland and grassland, between different plots and between the plots of neighbouring farmers.

**Contour ploughing** is practised wherever the soil seems to be susceptible to erosion because of the slope. Some farmers comment that the disadvantage of contour ploughing is that it makes farmers plough a piece of land twice a day which they think is not good for the soil. Farmers prefer ploughing land both vertically and horizontally with some days interval in between to expose soils and weeds to the sun and for proper aeration. In case of contour ploughing both passes with the plough have to occur on the same day because they cannot leave the land after vertical ploughing for fear of erosion.

# 5 Present and future

## Farmers' perception of change and their response

### Climatic change

All groups of farmers interviewed perceived a change in climatic conditions, especially over the last 20 years. This includes a general decrease in rainfall, a more prolonged dry season, and a change in rainfall pattern. Farmers observed that the rainy season starts later while the dry season has become hotter. The short rains now appear at the wrong time and are so heavy that they damage crops and wash away soils. Farmers have responded by altering their agricultural calendar. Nowadays they sow earlier to catch the first rains. In the past, they used to wait up to fifteen days after the first rain to 'let the soil release the smoke'. Selection of drought-resistant crops and varieties is another strategy used.

### Population pressure

All interviewed farmers observed a tremendous increase in population. As a result much of the land has been taken up for housing. Forests have been destroyed to expand the cropping area, and for construction and firewood. Despite some cultural and religious constraints, there seems to be a positive attitudinal change in favour of family planning. A few started using family planning methods, but this has not yet produced significant changes. Some complained that these services are not readily available to the rural people. People in Lasho do not even have any awareness of family planning.

### Land shortage

Many farmers own less than 0.25 hectare of land. To cope with the severe shortage of land, people have designed different strategies. The trend is that cultivated areas (*darkua* and *shoka*) expand at the expense of front yard, woodlot and grassland areas. Moreover, land is used more intensively through inter-cropping, relay cropping, double cropping and crop rotation. In addition, farmers use social arrangements to gain access to land through share cropping. They are also increasingly involved in off-farm activities, migration to town centres or investment in education of children so that they can find employment outside agriculture.

## Changes in tree species

Most natural forests have been cleared while indigenous tree species are being replaced by more hostile and demanding ones such as eucalyptus. However, most farmers seem not too concerned by this replacement as they are satisfied with the performance of eucalyptus. There is increased motivation, especially after the downfall of the Derg, to plant trees. Some farmers have started to inter-crop eucalyptus with food crops due to land shortage.

## Change in livestock ownership

The majority of farmers noted that the number of livestock per household has decreased drastically. Lack of livestock has a negative impact on the farming system and soil fertility, since it inhibits proper ploughing while reducing the availability of manure. Livestock based food stuffs have become scarcer which handicaps farmers' energy and health. Livestock are also a source of cash to purchase fertiliser, seed and to cover other expenses. Farmers resort to traditional institution to get access to oxen for ploughing. Other responses include joint ownership of livestock and care taking of other farmers' livestock to gain access to manure, food and cash without necessarily owning the animal.

## Introduction of new crop varieties

Another change has been the introduction of early-maturing and at times high yielding varieties of maize, potato and other crops. In the light of land shortage, this has brought about the use of land twice or even three times a year. This practice is typical of mid-altitude, rather than highland and lowland farmers. Though these new varieties are extremely important in increasing food production, they can contribute to the impoverishment of the soil by multiple cropping patterns.

## Introduction of fertiliser

Fertiliser use has become part of the Wolaita farming culture, except in some PAs in Lasho area. However farmers complained about problems related to fertiliser access, availability and use. Fertilisers have become expensive and only a few farmers can afford to purchase significant amounts. Debts from fertiliser are a major reason for selling livestock. Even those who could afford to buy fertiliser are not supplied on time. Since WADU was phased out, fertiliser often arrives up to two months later than the start of the sowing period.

Further, farmers feel that fertiliser application changes soil nature and structure of the soil. They complain that the soil quickly gets adapted to fertiliser and that it no longer provides good yields without it. Coping strategies are to retreat to the indigenous method of expanding *darkua* by using manure, leaf litter, and hoeing. Purchasing small amounts of fertiliser from retail traders has been another mechanism for those who cannot afford the 50 kg bag. Renting land through *kotta* arrangements from those who can supply fertiliser is another response.

## Farmers' perspectives on the future

Farmers are aware of the problems of their environment. They perceive acute shortage of land, unsatisfying levels of soil fertility, diminishing livestock holdings, decreased yields, erratic rainfall, acute wood shortage and a lack of forests. But what do farmers think are the solutions? How are they training their children to cope with these different situations?

Farmers try to cope with the current agricultural crisis by employing every means at their disposal. However, they also hope for 'scientific solutions' from governmental and non-governmental organisations. The decrease of trypanosomiasis incidence through project interventions has increased farmers' expectations. Yet a solution for enset bacterial wilt remains elusive, despite frequent interviews by a multitude of researchers. This is now reducing farmers' confidence in scientific solutions.

Many farmers have tried 'scientifically' recommended methods of soil and water conservation at one time or another. But none of these seem to have been attractive to farmers. Hence, traditional soil conservation and fertility enhancing mechanisms still predominate. However, farmers' vision for the future suggests that traditional methods have to be strongly supported by 'scientific' methods to remain viable.

Some farmers foresee that in 10-20 years time there will be a shortage of space to put the hut, let alone to farm. Land holdings are becoming smaller and smaller. Moreover, more than half of the current population is below the age of 18, many of whom are going to claim land sooner or later. Some farmers therefore invest in education so that employment outside agriculture will provide a way out. Others stress trading activities. Still others recommend that some of the young people should move to other places (state farms, town centres) to seek jobs.

These pressures also initiate and fuel local conflicts. For instance, cases of inter-generational conflict over land allocation are increasingly reported. Parents may not be able to allot lands from their small holdings to sons, while the latter insist that they deserve them. Older farmers expressed worries about the potential reactions of the younger generation if the current crisis continues unresolved.

The expansion of various religious sects may also add to local conflicts, with competition over followers between new sects and more established religions resulting in increased divisiveness in local society and the breakdown of earlier forms of moral economy based on long-established social networks.

# Conclusion

The study has portrayed the complexity of factors affecting farmers' capacity for soil fertility management. Cultural practices, belief systems, historical events, political turmoil and natural disasters are all inextricably linked with soil fertility management because they influence access to the major production factors. Moreover, access to different factors of production is highly interrelated. For instance, a rich farmer who owns oxen and cash to purchase inputs can also easily gain access to the land of a poor farmer who suffers from a shortage of these factors. The lands of the rich farmers look much better than those of the poorer ones. Better economic status means better access to livestock, labour and land which is positively correlated with their capacity to maintain and enhance soil fertility. Some of the richer farmers have inherited fertile land and other assets which help them to remain rich as long as they manage their resources well. Others are entrepreneurs who used their creative effort to improve their farming economy. The poorer farmers are composed of different categories. Many were impoverished by unfortunate events such as death or illness of family members, death of livestock, poor health, exploitation and oppression, famine, drought and so on.

Fortunately, there are complex institutional networks in Wolaita which help people bridge 'incomplete resources', but they cannot solve all the problems of the poor. Thus poorer farmers are badly in need of some external inputs to enhance the fertility of their lands. In this regard the local mutual self-help system could play an essential role, if assisted by other support mechanisms. Asset building is an indispensable component of any strategy to reinforce the capacity of farmers for soil fertility management.

Farmers in Wolaita possess remarkable knowledge of the nature and types of soils, and show considerable skill in the arts of soil fertility management. The *darkua* is the pillar of the Wolaita production system. Finding ways to expand *darkua* areas is therefore the most important challenge for sustainable agricultural development in Wolaita.

There are differences among farmers in knowledge, skill and motivation for soil fertility management. Hence, there is a need to strengthen the fora within which farmers can learn from each other, taking into account the type of interpersonal relationships and forms of social networks among farmers in a given area. Some farmers have specialist expert knowledge on certain aspects of the farm, but their creative ideas are not always easily picked up by others. This has implications for the design and management of on-

farm trials, technology testing and the extension system. Not only the mere skill or economic success of a 'demonstrator farmer' is important, but also the way he/she is perceived by others. Those farmers who have good social relationships and dense networks, can more easily influence quite a lot of people, as against those creative but socially less regarded farmers.

The study also reveals, that increasing poverty often places the question of survival before the conservation of resources. As a result of these physically threatening and psychologically depressing conditions of poverty there is great disparity between what farmers know and what they are able to do.

The historical analysis presented here has shown how the root causes of the rural crisis in Wolaita can be traced to a history of political turmoil, misguided policies and political exploitation. Tenure insecurity has seriously inhibited investment in soil fertility, which is a long term process of soil improvement. Unfavourable government policies laid the foundation for mistrust of outsiders. Past governments never cared to listen to farmers while policies have always been 'top-down'. The major concern of government agents has been to execute the will of higher authorities. Farmers' conditions have now become so vulnerable that there is no more room for such gambling. Hence, policies, as well as development interventions, must be informed by local realities, security oriented and participatory in nature. It is hoped that this paper will go some way towards reforming future development policy and practice in Wolaita.

# References

- Abreham, Zerfu (ed.).** 1973. *Wolde Semayat ye wolamo ye limat abat*. Sidamo, Ethiopia.
- Berhanu, Bibiso.** 1995. *Production practices in Damotta Woyde: A case of Sura Koyo*. MA Thesis in Social Anthropology, Addis Ababa University (unpublished).
- Chiatti, Remo.** 1984. *The Politics of Divine Kingship in Wolaita (Ethiopia), 19th and 20th Centuries*. PhD Thesis, University of Pennsylvania.
- CSA.** 1996. *The 1994 population and housing census of Ethiopia: Results for the Southern Nations, Nationalities and People region*. Vol. part IV. Addis Ababa.
- Data, Dea.** 1997. *Soil fertility management in Wolaita, Southern Ethiopia: An Anthropological Investigation*. Technical pamphlet no. 14. Farmers' Research Project (FRP), FARM Africa, Addis Ababa.
- Dessalegn, Rahmato.** 1984. *Agrarian Reform in Ethiopia*. Scandinavian Institute of African Studies, Uppsala.
- Dessalegn, Rahmato.** 1992. *The Dynamics of Rural Poverty: Case Studies from a District in Southern Ethiopia*. CODESRIA series/92. Dakar.
- Dessalegn, Rahmato.** 1995. Ethiopian Land politics at the cross road. In: Dessalegn R. (ed.) *Land tenure and land policy in Ethiopia after the Derg*. Proceedings of the 2nd workshop of the land tenure project. University of Trondheim.
- Ejigu, Jonfa, Tesfayu, Berhanu, Kelsa, Kano and Fanuel, Follo.** 1997. *Participatory Soil Mapping and Characterisation in Kindo Koysa, Southern Ethiopia*. Technical pamphlet no. 13. Farmers' Research Project (FRP), FARM Africa, Addis Ababa.
- Eyasu, Elias.** 1997. *Soil Fertility Management and nutrient balances in Kindo Koysa Farms. A case study in North Omo, south-western Ethiopia*. Technical pamphlet no. 15. Farmers' Research Project (FRP), FARM Africa, Addis Ababa.
- Eyasu, Elias.** 1998. *Is Soil Fertility Declining? Perspectives on Environmental Change in Southern Ethiopia*. Managing Africa's soils, No. 2. London.
- FARM Africa.** 1992. *Report of Diagnostic Surveys in Hanaze and Fagena mata Peasant Associations in Kindo Koysa Woreda*. SOS-Sahel, FARM Africa, and MOA Environment Protection and Development Programme.
- Haileyesus, Seba and Menelik, Tibebe Selassie.** 1995. *Ethiopia village studies: Gara-Gado, Wolaita*. (First draft).
- Kindness, H.** 1994. *Household Cash Income Sources and Income Generating Activities in Wolaita, North Omo*. FRP Technical Pamphlet no. 7, FARM Africa. Addis Ababa.
- Marcus, G. Harold.** 1969. *Motives, methods and some results of the unification of Ethiopia during the reign of Menelik II*. Proceedings of the third international conference of Ethiopia studies, Addis Ababa.
- Pausewang, S.** 1983. *Peasants, land and society. a social history of land reform in Ethiopia*. Munchen, Welt forum verlag.
- Pausewang, S.** 1990. Meret La Arrashu. In: In: S. Pausewang et al. (eds.) *Ethiopia: Rural development options*. Zed Books Ltd., London.
- WADU (Wolaita Agricultural Development Unit).** 1979. *Annual Report 1979/80*. Wolaita Soddo.

## Working papers published in the series **Managing Africa's Soils**:

- 1 *Soil Fertility Management in its Social Context: A Study of Local Perceptions and Practices in Wolaita, Southern Ethiopia*. D. DATA. September, 1998.
- 2 *Is Soil Fertility Declining? Perspectives on Environmental Change in Southern Ethiopia*. E. Eyasu. September, 1998.
- 3 *Experiences in Participatory Diagnosis of Soil Nutrient Management in Kenya*. D. Onduru, G. N. Gachini and S. M. Nandwa. September, 1998.

**Managing Africa's soils** papers can be obtained from:

Drylands Programme, IIED  
3 Endsleigh street  
London WC1H 0DD  
United Kingdom  
Tel: +44 171 388 2117  
Fax: +44 171 388 2826  
E-mail: [drylands@iied.org](mailto:drylands@iied.org)

These working papers can also be downloaded from internet: <http://www.iied.org/>  
or from <http://www.ab.dlo.nl/>