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Reducing Farming Household Vulnerability in Connection to Khat Cultivation

- A Case Study in Gotu Onoma, Ethiopia

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Foreword

This study is my master thesis in biology within the frames of the Natural Resources Programme, at the Swedish University of Agricultural Science, SLU, in Uppsala.

The field work was carried out in the area of Wondo Genet in Ethiopia from October 2005 to February 2006 and was part of a participatory research project, DOIT-AR, within the Wondo Genet College of Forestry.

First I would like to thank Belaynesh Zewdie and Takele Deresse for accepting me to work together with them in their DOIT-AR sub-project, receiving me in Ethiopia and for all the practical and mental support during my stay in Wondo Genet.

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All the Glory to God! Amen!

Sofia Karlsson

Uppsala, June 2006

Abstract

This master thesis study was carried out in the area of Wondo Genet in Ethiopia from October 2005 to February 2006. The study is connected to the DOIT-AR project which is an interdisciplinary, action research project which aims at making local communities to primary clients of the research done within the Wondo Genet College of Forestry.

The objective of the study was to better understand how farmers' livelihoods could be understood in the context of khat and how the vulnerability of khat growing farmers could be reduced. The study was connected to the DOIT-AR sub-project "Reducing Farming Household Vulnerability to Hardships as a Basis for Improving Livelihood – A Case Study in Gotu Onoma, Wondo Genet".

Khat is a perennial shrub which leaves are chewed on for their stimulating effect. The use of khat is traditional among Muslims in east Ethiopia, but cultivation and chewing is now spreading to other parts of the country and the use of khat is also wide spread in the world.

This case study was performed with the use of qualitative methods and an action research approach was used. The research is based entirely on interviews and is seen as a participatory process together with three farming families. Beside the three participating farmers, other interviews were performed in order to better understand the farmers' situation.

Sources of vulnerability in connection to khat were identified and possible changes to improve the situation were discussed with the farmers. It was found that khat is a high and steady source of income and secures the livelihood of the farmers throughout the year. In terms of reduced vulnerability together with khat was also mentioned the positive effects of chewing as well as the soil-conservation character of the khat plant. Sources of farmers' vulnerability in connection to khat are; the relation with traders where farmers have an inferior position, the big problem with thieves on khat in the area with breakdown of social ties and a high work-load with watching the khat as outcomes, the more or less haphazard use of pesticides on khat as well as the negative effects of chewing.

It is recommended that more research is done on health effects in connection to khat. An open approach from the government towards khat cultivation and chewing could open up the discussion on the issue, both on social effects and issues of health. More agricultural support, foremost with advice on pesticides could make a considerable difference for the farmers. A common platform between the farmers to meet the problems of thieves, to strengthen the position towards the traders and to learn about pesticides would probably reduce their vulnerability.

Table of Contents

Wordlist and abbreviations

Amharic	The national language of Ethiopia.
AZWAB	Awasa Zuria Woreda Agricultural Bureau.
Birr	Ethiopian currency, 1 birr almost equivalent with 1 SEK.
Debub	South in Amharic.
Debub Univeristy	Formed in 1999 by uniting Awassa College of Agriculture (ACA), Dilla College of Teachers Education & Health Sciences (DCTEHS) and Wondo Genet College of Forestry (WGCF).
DOIT-AR	Development Oriented Interdisciplinary Thematic Action Research.
Enset	False banana, staple food in the study area.
Gari	Horse cart.
Gasha	40 hectare.
Got	Sub-village.
Kebele	Part of woreda.
Key	Red in amharic, name of khat variety.
Magala	Reddish in amharic, name of khat variety.
Merqana	The state of excitement that follows the khat chewing.
PA	Peasant Association.
PRA	Participatory Rural Appraisal.
SNNPR	Southern Nations Nationalities and People's Republic.
Teff	Cereal used for making *injera*, the traditional staple food in Ethiopia.
Timad	Around 4000 to 5000 m^2.
WGCF	Wondo Genet College of Forestry.
Woreda	Part of region.

1. BACKGROUND

1.1. INTRODUCTION

In the area of Wondo Genet the mild narcotic shrub khat has been grown since the 70's, but in recent years the cultivation has increased and is spreading even among small-scale farmers. In Gotu Onoma, one of the poorer Peasant Associations (sub-regions) in the Wondo Genet area, khat was introduced around eight years ago. This area was of interest for the study because of the possibilities it offered to better understand the interrelationships between poor farmers' livelihood and vulnerability and the introduction of khat.

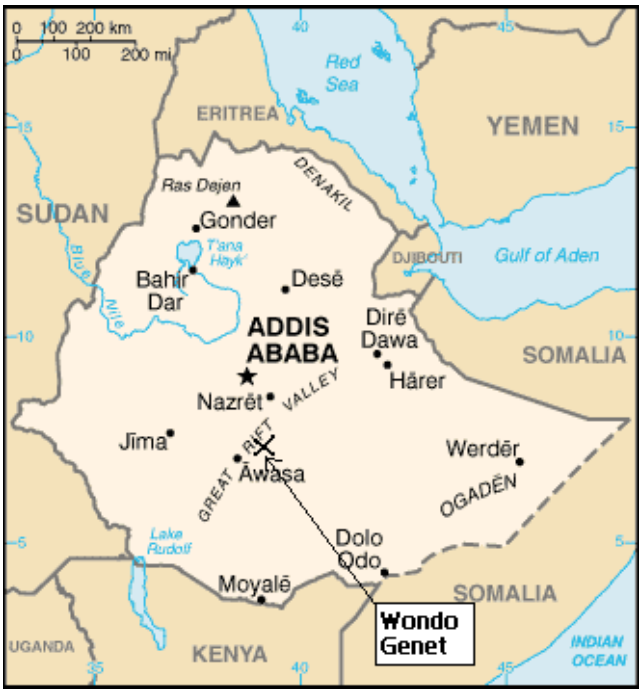

Figure 1. Map of Ethiopia, the arrow shows the study site. (Source: CIA, 2006)

The study was undertaken in the Gotu Onoma Peasant Association (PA) in close proximity to Wondo Genet College of Forestry, situated around 260 km south of the capital Addis Ababa. In the PA around 400 families are living and it covers both wet lowlands and dry, hilly parts. Gotu Onoma is divided into four sub-villages; Toke, Kombolcha, Chofere and Yudo.

1.2. DOIT-AR

The Development Oriented Interdisciplinary Thematic Action Research (DOIT-AR) project, is a collaborative programme which includes Debub University (WGCF), the Swedish University of Agricultural Sciences (SLU), the International Centre for Agroforestry Research (ICRAF) and other relevant stakeholders. The first research proposals were implemented in 2005 and the whole project is seen as a new approach to research where development outputs are more linked to research activities. In this regard it is expected that local communities in the Wondo Genet area should be primary clients of the research. DOIT-AR is seen as a first attempt to practice participatory research at a larger scale in Ethiopia. The project is divided into three main regional cases; Wondo Genet, Rift Valley – Langano and Ashoka, all situated in the same region, SNNPR[1]. Within the frames of DOIT-AR there are a number of sub-projects with around three to five researchers working in different physical and development areas in the three study

[1] Southern Nations Nationalities and People's Republic

sites. Most researchers are staff-members at WGCF and at the time of this research there were 23 groups who had their applications approved for implementation (Deresse, 2005). The main idea with the DOIT-AR-project is to connect research with development and to combine local and scientific knowledge and the initial project period is three years (Kassa, 2005). For overall objectives and more information on DOIT-AR, see appendix 1.

1.3. THE VULNERABILITY GROUP

The DOIT-AR-project "Reducing Farming Household Vulnerability to Hardships as a Basis for Improving Livelihood – A Case Study in Gotu Onoma, Wondo Genet" (given the short name "Vulnerability Group" by the author) was conceived by Belaynesh Zewdie and Takele Deresse. The team also includes other part-time researchers from Debub University and in January 2006 researchers from other disciplines and backgrounds have collaborated in order to achieve a more interdisciplinary group.

This sub-project aims at addressing issues that are of concern to farming households in Gotu Onoma, one of the sub-regions in the Wondo Genet area. The objective of the project is to improve the production capacity of individual households and to assess how different interventions affect household vulnerability to hardships (Zewdie *et al*., 2004).

1.4. KHAT

Khat and cultivation

Khat is a tree of the family Celestraceae, which usually grows at high altitudes in East Africa and Yemen. Khat was first observed in Ethiopia in the 15th century, and then transferred to the western parts of the Arabian Peninsula. The leaves and young twigs of the plant have been traditionally used in a variety of ways and for different purposes. Of particular interest is its stimulating effect, which has led to its wide use in several countries, namely Djibouti, Ethiopia, Somalia, and Yemen and to a lesser extent, in Kenya and Tanzania (Belew, 1997).

In Ethiopia khat is grown mainly in the eastern parts, but in the last 15 to 20 years the cultivation and consumption has spread to many places in the country. There is an ever growing demand both for domestic consumption and the export market. Most of the exported khat is grown in the east and goes mainly to the neighbouring and the Middle East, but in recent years the market for khat has grown to also include Europe and America (Adenew, 2005). In Europe khat is classified as a class C drug and it is illegal in all European countries except Netherlands and United Kingdom (NE, 2006).

Khat is a fundamental source of livelihood for millions of households and individuals in Ethiopia. Many people are directly or indirectly engaged in the "khat-sector" such as producers and traders in rural areas as well as distributors in towns and cities. Production and marketing of khat is also an important contributor to the national economy at large. Regional as well as the federal government collect large amounts of taxes from the khat trade, both domestic and export (Adenew, 2005). The prices for the export trade have been rising since the mid-70's and both legal and illegal channels are used (Ezekiel, 1994).

There are diverging ideas on how khat affects the farming system. In Bahar Dar where khat is a fairly recent phenomenon, it is considered to need less fertilizers than other crops, but is more demanding in terms of water, pesticides and work (Almqvist *et al.*, 2005). However, a study in eastern Ethiopia (Mulatu *et al.*, 1998) shows that a reason for the increased cultivation of the shrub is that it requires relatively low labour and input. Most sources suggest that khat growers have a higher wealth status than non-khat growers.

Khat chewing and health aspects

Traditionally khat has been chewed by Muslims during religious ceremonies and during prayer to facilitate contact with Allah (Alem, 2004). Today chewing is common among other religions and in most parts of the country (Gebissa, 2004). Some of the effects of khat chewing are enhanced concentration, feelings of euphoria and suppression of hunger and sleep (Lemessa, 2001). Khat is also chewed to increase work efficiency and facilitate social interactions (Mulatu *et al.*, 1998).

The effect of khat varies from person to person. Some people mention that the main reason for chewing is an enhancement of socialisation and that the ceremony is a nice way of spending time with friends, not as much the physical effect of khat such as staying awake or getting ”high”. Different production areas and varieties of the khat are reported to give dissimilar effects on the same chewer (Gebissa, 2004).

Figure 2. Khat chewing in bus

The active ingredient in khat is the alkaloid cathinone, sometimes called “natural amphetamine” (Belew, 1997). The khat is preferably chewed within two days after harvesting, after that the leaves loose much of the desired effect.

Even though khat is mainly a social drug, it is taken to treat illnesses such as malaria (Chevallier, 1996). The medical use of khat has a long history and in Harar region people consider khat to treat more than 500 ailments. Historically, khat has also been used as medicine to treat symptoms of depression and melancholia and there are sources telling about Alexander the Great using khat to cure ill soldiers (Alem, 2004). In the eastern parts of Ethiopia khat is known to treat influenza as well as coughs and asthma (Mulatu *et al.*, 1998)

The most obvious effect of khat-use can be seen on the digestive system where gastritis is fairly common among regular chewers due to the effects of the acid tannin in khat. Daily

intake can also cause chronic constipation (Elmi, 1983). Hyperactivity, insomnia and hypertension are other side effects of khat (Heacook, 1974), as well as dental and oral problems (Elmi, 1983). Khat is said to have reproductive toxicity in human beings and several studies have shown that khat use can lead to a decrease in sperm quality, low birth weight and inhibition of lactation in mothers (Gebissa, 2004). Khat should not be taken during pregnancy (Chevallier, 1996).

Khat in itself is rarely considered to cause psychological disorders, but in persons already prone to mental illness, intake of khat can lead to psychosis or schizophrenic reactions (Jager, 1994). There are reports though, on regular chewers who become psychotic when they increase their intake of khat (Alem *et al*., 1997). More common are withdrawal symptoms such as nervousness, nightmares, lethargy and "absent-mindedness" (Gebissa, 2004).

It is unclear whether khat is addictive or not, but several researchers argue that regular users might become psychologically addicted rather than physically and that it is more correct to talk about habituation than addiction (Gebissa, 2004). In recent years the increased consumption of khat has raised public concern about the social costs, particularly the wide-spread chewing among youths (Adenew, 2005).

2. PROBLEM STATEMENT AND OBJECTIVES

2.1. PROBLEM STATEMENT

Farmers in the PA Gotu Onoma are facing more difficult living conditions than before, with population growth being one of the primary causes. More people have to survive on smaller plots of land and new interventions seem to be necessary in order to meet the new conditions. Khat is spreading and it is not clear how this affects the area. Khat is an issue with many dimensions, both when it comes to growing and chewing, including a wide range of positive and negative sides. Considering this it is difficult to assess the overall effects on a single khat-growing farming family and the system they are part of.

The cultivation and consumption of khat has received little attention in research, probably partly because it's a complex and sensitive issue. The government discourages khat cultivation, at the same time many farmers and also Ethiopia as a country depends on khat trade. Many aspects need to be taken into consideration when estimating the overall effect of khat on people and the country, such as food security, health, economy and social effects.

2.2. RESEARCH OBJECTIVE

The main objective of the study is to better understand how livelihood vulnerability can be understood in the context of khat.

2.3. DEVELOPMENT OBJECTIVE

The study aims at addressing as many aspects as possible in an attempt to estimate the interrelation between khat famers' livelihoods and how the vulnerability in connection to khat could be reduced.

The DOIT-AR project was considered to be a suitable platform for this participatory research and the study is connected to the group ”Reducing Farming Household Vulnerability to Hardships as a Basis for Improving Livelihood – A Case study in Gotu Onoma, Wondo Genet”. This sub-project aims at reducing the perceived or real vulnerability of farmers. The study on khat is connected to one of the specific objectives of the case study (number five); “To assess the impact of new interventions, i.e. introduction of crops like khat, on vulnerability”.

The general objective of the Vulnerability Group is to study the pathways through which the production capacity of individual households can be improved and to assess how different levels of interventions affect livelihoods and the vulnerability of individual households to hardships.

2.4. SUB-OBJECTIVE

Beside the process with the farmers, the sub-objective of the study was, for the author coming from a Swedish university, to join one of the DOIT-AR groups and enrichen the process of cooperation between SLU researchers and researcher from Debub University. Apart from the author, all team members belong to the staff at the Debub University.

2.5. RESEARCH QUESTIONS

Main research question

- What impact does khat and its cultivation have on the vulnerability of farmers' livelihoods?

Sub-questions:

- What are the historical and recent trends in khat cultivation and consumption in the area?
- What are the key characteristics of a khat dominant farming system?
- What are the reasons for growing khat?
- What are the perceptions on khat chewing and its affect on people?
- How do government policies related to khat affect farmers?
- How is khat marketed through the market chain?
- What are the emergent issues when a gender frame is applied to the above questions?

3. THEORETICAL FRAME-WORK

3.1. LIVELIHOODS AND VULNERABILITY

The concept vulnerability is often used in connection to poverty and attempts to explain what poverty is and what makes people poor**.** Belaynesh *et al* (2005) defines vulnerability as the magnitude of the threat to future poverty.

The connection between poverty and vulnerability can be seen as an interrelation where poverty often goes hand in hand with vulnerability (to hunger, illness, natural disasters, exploitation, further loss of already limited resources) together with physical weakness, powerlessness and isolation (Grandin, 1988). Why vulnerability is so closely connected to poverty or the opposite, wealth status, is explained as follows:

"Particularly in developing countries, the wealth status of a household affects almost every aspect of the life of its members."

The conventional definition of poverty has been mainly associated with income, using quantitative measures. In the last decade though, the emphasis of the understanding of poverty has changed into being more holistic using a livelihoods framework with a qualitative understanding (DFID, 2006:a). Chambers (1997) states that vulnerability is the opposite of livelihood security and the most important measure to reduce vulnerability is to secure food and income flows during the most critical periods of the year. People with more diverse and complex livelihoods and farming systems have better chance of reducing their vulnerability. Chambers also argues that poverty is dynamic and what is needed when assessing poverty is a multidimensional approach. This approach may include structural factors, social relations, gender and intra-household relations, livelihoods strategies, insecurity and powerlessness. To only rely on income and consumption based measures in poverty assessment does not show the reality of how poor people experience their situation. It rather meets the needs of "standardized professionals" (Chambers 1997).

The DFID livelihoods framework highlights three aspects of vulnerability where shocks, trends and seasonality affect people's livelihoods. Those factors are often beyond the control of local people and livelihood security or vulnerability is a part of everyday reality for many poor people. A livelihood can be seen as sustainable when it can cope with and recover from stresses and shocks and assure its assets both now and in the future without undermining the natural resources base (Farrington et al, 1999). This is usually considered in terms of access and control over five different types of assets; human, social, financial, natural and physical capital. These assets are more important than only enabling people to make a living, they also make people engage with and make changes to the world in which they live. The livelihoods framework is manifested in several different diagrammatic depictions, one such depiction can be seen in figure 3.

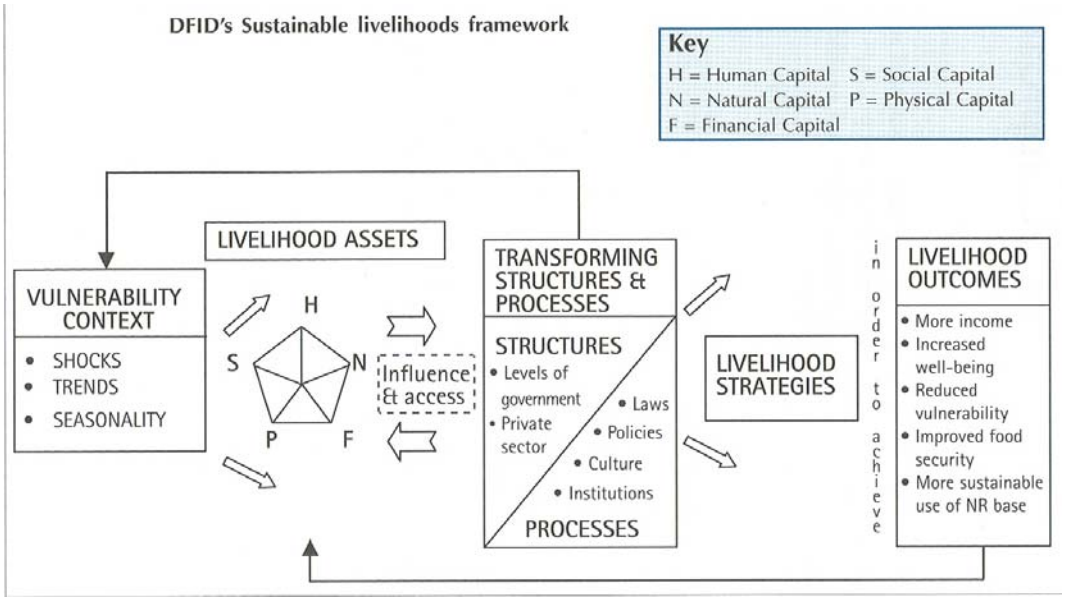

Figure 3. DFID's Sustainable livelihoods framework. (Source: Ashley *et al.*, 1999)

The livelihoods framework can also be used when drawing linkages between livelihoods of rural and urban households. IIED suggests that "For the majority of the world's poorest residents, local rural-urban linkages, investment patterns and population movements are probably far more important than the much touted global linkages, foreign direct investments, and international migration."

Another way of explaining vulnerability can be found in "Crisis and Renewal", where Hurst (1995) claims that what makes people vulnerable is foremost the lack of flexibility. To state this, the comparison between hunter/gatherer and herder culture is used, where the flexibility decreases with the transition from being moving hunters to settled herders. The hunters are "dynamically stable" with always continues learning and emergent, "opportunistic", strategies. Much of this is lost with more individual possessions and decreased community dependency.

Sultana (2002) highlights the social aspect of vulnerability where insecurities related to social status are discussed. Social vulnerability can be connected to a breakdown of social ties, exclusion and discrimination of minority groups, both from society and government, and lack of protection.

3.2. SYSTEMS THINKING

What influences a farmers' vulnerability is a complex issue and it is impossible to cover all aspects of it. It was important to keep this in mind during the study and soft systems thinking was used as the theoretical base. To get as much a complete picture as possible, the farmers' situation was seen as a web of relationships where every component might influence the others. As Capra (1996) describes it: "The properties of the whole arise from the interactions and relationships among the parts". Systems thinking includes seeing interrelationships rather than linear cause-effect chains and requires the skill to see processes of change rather than snapshots (Senge, 1990).

4. METHODS

4.1. METHODOLOGICAL APPROACH

The study was performed as action research which is appropriate when the researcher enters a real-world situation and aims both to improve and acquire knowledge. The conventional research process is based on hypothesis testing to destruction, which was developed within the natural sciences. This becomes problematic when it comes to social phenomena. When dealing with people replicability can not be applied and it is impossible for the researcher not to be a part of the research process. "Themes" replace hypothesis (Checkland, *et al.,* 1997). Action research is based on the assumption that a social reality is created and re-created continuously in a social process and that the research is a deliberate process of reflective and mutual learning (Argyris *et al.,* 1982).

Action research associates research and practice through change and reflection in an immediate problem situation. Researchers and practitioners act together on a particular cycle of activities including problem diagnosis, action intervention and reflective learning (Avison, *et al.,* 1999).

4.2. METHODOLOGICAL CHOICE

The bases for the study were the wishes of the farmers as to what they thought could be changed or done to reduce their vulnerability. Therefore an open approach and the use of qualitative, participatory methods was considered to be the appropriate alternative. In order to meet the objectives of the study and to understand the farmers' situation enough to engage in a process with them, much time had to be spent with each of them. Considering this, a case study approach using qualitative methods was decided upon. Three households were considered to be a suitable number of participants for the length of the study.

The initial steps of the research was to assess the interest of the farmers and their desire to change their situation and it was important for the researcher to have an open mind and to be as little prejudiced as possible. The farmers were visited regularly during a period of three months and a considerable amount of time was spent with each of them. Participatory methods were used where the farmers influenced the proceedings and created the research process together with the researcher. The research was performed in a cyclic process where discussions with the interpreter and the Vulnerability Group and other researchers at the college, and reflection in between the farm visits was an important part which could improve the sub-sequent interviews and lead to action. A desired out-come of the process was supposed to be a change to reduce their vulnerability.

It is important to remember that the aim of the study was not to produce scientific truths in the conventional sense, but rather to look deep into a few cases. Most results and conclusions are drawn with the opinions of the three farmers' as a base and even though other farmers in the area probably are facing very similar realities, the results of this study should not be extrapolated to generalize the reality of all farmers.

Selection of participants, farmers

At the inception of the study the Vulnerability Group of the DOIT-AR project had managed to create a good relationship with the kebele leadership as well as with the participating farmers. They began in April 2005 by gathering descriptive data from approximately 400 farmers in the PA and in consultation with them (local authorities present, but not participating actively) they selected 64 households as participants of the project, equally divided into the four sub-villages of the kebele. The farmers themselves chose members of different wealth status using their own criterias. The only prerequisite to participate was that the farmer should have a piece of land. Of the 64 members, 32 were women and more concerned about the homestead (Zewdie, 2005), while the men where more focused on the farmland, fertilizers etc. The idea was that the other farmers also should benefit from the project indirectly by learning about new ideas etc from the 64 participants.

Since this is a case study, the range of different settings and living conditions for the farmers in the area can not be covered. The intention is to count on the quality of the participants selected. But in order to increase the author's understanding of farmers' reality as well as the contribution of this study to the research of the Vulnerability Group, some form of selection based on diverse criteria account for the heterogeneity of farmers.

Those criterias include;

- location in the kebele
- size of farmland
- size of khat land
- how long they have been growing khat
- irrigation
- owning of animals
- family size
- gender
- age

The selection of farmers was made with help of and discussion together with key informants from the kebele administration and the research-team. Since this case study is part of the "Vulnerability-project", farmers were selected from the 64 households included in the larger project. The idea of the case study was that the process with the three selected farmers should also influence the surrounding farmers so that they as well would gain something from the project. That could include sharing new ideas and be part of the discussion that follows the research. To achieve this, the main idea was to choose farmers from different parts of the kebele. After a visit in Chofere it was decided on that in that sub-village there were no farmers suitable for this case study. The reason was that most of the khat farmers in Chofere had very small plots and little experience with khat farming. Among the 64 households included in "Vulnerability-project", there was only one khat farmer in each of the sub-villages Toke and Kombolcha included. In those areas a significant part of the khat in Gotu Onoma is found and therefore they were selected as participants of the case study. The participating farmer in Toke sub-village was a woman, but since khat is mainly cultivated by men, most of the interviews had to be performed with her husband. A third farmer up-hills in Toke was also selected. Accordingly; the three families included in the study were found in the sub-villages Toke, Kombolcha and Yudo.

The chosen farmers were visited together with kebele leader and asked for their willingness to participate. All three of them agreed.

Selection of participants, others

Even though the focus of the study is the three farming families, other interviews and discussions with farmers' representatives, governmental authorities, traders and agricultural experts were held. This was made in order to gain a broader understanding of influences on farmers from their surrounding and served as a base for further discussions together with the farmers.

Selection of interviewees was made along the way, when new ideas came up and there was a need raised for further information. Often the selection was based on information gained from key informants and advice given in interviews and from other respondents.

Selection of interpreter

During most of the work an interpreter was used to translate between Amharic and English. The interpreter was a fourth-year student at the Wondo Genet College of Forestry. Due to the participatory approach of the study emphasis was given to find an interpreter who understood the idea and had an appropriate attitude towards the farmers and their knowledge. Because of the work-load of interviewing, writing and observing at the same time, the translator also functioned as field assistant who made observations and contributed with ideas and discussions on the outcomes of the field visits and interviews. There is a variety of languages in the research area and not all interviewees understand Amharic. Sometimes a neighbour or relative had to help with the translation into Amharic.

Two of the wives where Muslims and thus not allowed to talk to a male interpreter. To be able to interview them, an additional, female interpreter who spoke Oromic had to be consulted for a few days.

Methods used

Farmers:

1. **Participant observation**
   In the initial stage of the study, the farmers were visited a few times without the researcher tainting the subject of research. This was done in order to build trust with farmers and also to gain a basic understanding of the setting and farmers living conditions. Due to the work of the Vulnerability Group, carried out during the previous six months, a certain degree of trust had already been achieved at the time of the start of this study.

2. **Semi-structured interviews**
   Interviews with open-ended questions with the help of check-lists where conducted. Sometimes the interviews were conducted with the help of various PRA-tools such as day clock, seasonal calendar, time line, pair-wise ranking and Venn-diagram. For example of what the tools can look like, see appendix 2. The PRA-tools were used mainly as a base of discussion.

   There were also continuously on-going discussions with farmers during the farm-visits.

Others: Most interviews with representatives, authorities and others were held in an open-ended way with the help of a check-list of issues needed to be covered. Often the interviewees came up with additional topics they found important in connection to the subject of research.

Figure 4. Interview situation

In the final phase of the study drivers of vulnerability in connection to khat were identified and discussed with farmers.

A structuring tool

As a tool for structuring and understanding the system of which the farmer is a part, the CATWOE mnemonic was used (Checkland *et al.,* 1990). CATWOE is a checklist for problem solution or goal definition and helps to see the input-output transformation of a system, rather than to look at the goal or system itself. Root definitions are formulated considering the word CATWOE as follows:

C = Customers – victims or beneficiaries of the transformation process of the system.
A = Actors – the ones who can act in the system, the "doers".
T = Transformation process – what the system does to change inputs to outputs.
W = World view/Weltanschaung – the wider context, the values and ethics behind the system.
O = Owner – those who can stop the transformation process and the system.
E = Environmental constraints - elements outside the system that limits the output.

Methods in connection to sub-objective – joining DOIT-AR group

In the early stages of the study a resource survey was being carried out by the Vulnerability Group. The information gained should show, apart from baseline information about the households, what changes were wished for among the different farmers. This was a good opportunity for the author to visit farmers in the different parts of the study area and gain an introduction to the field. The researchers at the Forestry College often have a high work load with other commitments such as teaching and administrative work and the author was there for some months of full time work. This lead to that after choosing the three participants, the work was carried out rather independently with assistance from and regular discussions with the group.

During the study period the author attended a DOIT-AR seminar on an internal assessment recently done about the proceedings of the different projects.

5. RESULTS

5.1. THE STUDY SITE

The Peasant Association, kebele, Gotu Onoma is situated at the foot of the Abaro Mountain in the catchment of Wondo Genet, some 260 km south of Addis Ababa, the capital of Ethiopia. It is included in the regional state Southern Nations Nationalities and Peoples Region (SNNPR) and is under the administration of Awasa Zuria Woreda (Zewdie, 2002). For map over the woreda, see appendix 3. Parts of Gotu Onoma follow the road to Shashamene, which is the main commercial centre in the area and only 13 km from Wondo Genet. Awasa, the regional government's capital, is 35 km away and Gotu Onoma is one of 68 PAs in Awasa Zuria Woreda (AZWAB, 2005). The proximity of the study area to several major towns connects households to the commercial centres and facilitates marketing of outputs from the farms as well as access to inputs. The vigorous trade and transportation that involve many people in the area is an unusual phenomenon for a rural area in Ethiopia, situated more than 260 km from the capital (Wolde, 2003).

Gotu Onoma covers a land area of 800 ha (20 gashas) and is divided into four sub-villages or *gots*; Toke, Kombolcha, Yudo and Chofere. The number of households in

Gotu Onoma amounts to 491, and even though the region is one of the most densely populated areas in Ethiopia, Gotu Onoma is sparsely populated compared to the surrounding PAs. Due to resettlement and immigration, mainly as a result of the high resource potential of the area and different agrarian policies, there is a big ethnic diversity within the kebele (Wolde, 2003). People from seven different tribes with different languages can be found; Oromo, Sidama, Amhara, Woleita, Kambata, Hadija and Gurage. Most people in the area belong to either Islam, Christian Orthodox or Protestant religion.

The climate in the area ranges from tropical wet to dry highland and it belongs to the *weyna dega* agro climatic zone (mid-altitudes 1600-2600 m, temperatures between 15 and 25ºC). The average temperature is 19ºC and the mean annual rainfall is 1200 mm with a bimodal distribution. The main rainy season is between June and October and the short rains last from March to May. The bedrock in the Wondo Genet area is mainly acidic and sometimes interbred with basaltic lavas. Clay and sandy loam are the dominant soil types in the area with more sand up-hills. The soil fertility is considered to be good, but less so in Gotu Onoma compared to surrounding kebeles. Erosion is also more severe in Gotu Onoma due to its placement in the more hilly parts (Zerihun, 1999). Within the PA there are big differences in the landscape, which ranges from wet lowlands to dry parts at a higher altitude (author's observation).

Figure 5. Gotu Onoma, the area of study

Agriculture

The main crops grown in the area are maize, potato, sweet potato, teff and wheat. The average size of land per household is 0.5 to 1 ha and most farmers grow enset which serves as a staple food (author's observation). Close to surface water where irrigation is possible, in the lower parts of the kebele, cash crops such as sugar cane, coffee and khat are grown (Zewdie et al, 2004).

The land use of Gotu Onoma has changed from large coffee plantations in the Selassie-time[2], into sugar-cane as the main cash-crop after 1971. In recent years khat production has taken over some of the land (Sub-village representative 1, 2005). The present trend is a shift towards cash-cropping in general, where khat and sugar-cane are the most important ones, but also potato, sweet potato, maize, wheat and teff are purchased to some extent (Sub-village representatives, 2005).

Poverty

Gathering of baseline information for the DOIT-AR programme showed that the people in the kebele have to deal with constraints that limit possibilities of livelihood improvement. Such factors mentioned by the farmers were decline in soil fertility, lack of appropriate agricultural support (for fertilizers, improved seeds etc) and population growth which leads to smaller farmland plots and lack of off-farm job opportunities. The period between March and May, before the main rainy season, is a challenging time for many families. The main harvest takes place around October and in March many families have emptied there food stores.

There is a big difference in wealth between the different parts of the PA with the poorest farmers living at the higher altitudes. In the sub-village Chofere people sometimes have to depend on food aid from the government for survival. A poor farmer is considered by the local people to be one with no land or a very small plot. Another characteristic that was mentioned was that a poor farmer is one who has land but is lazy or can not cultivate it due to sickness (Sub-village representatives, 2005). According to the farmers wives rich people are the ones who can afford to send their children to school and they have better houses and clothes than the poor. Another characteristic is that rich people engage in poultry production.

Figure 6. Farmer's child

[2] Haile Selassie was the Emperor of Ethiopia 1930-1974 (NE, 2006)

5.2. THE SITUATION OF KHAT IN THE STUDY SITE

Khat was introduced in Gotu Onoma around eight years ago, but in other kebeles in the Wondo Genet area khat has been grown since 1971. The current trend in all the four sub-villages of Gotu Onoma is an increase in khat-cultivation, both expansion of already existing khat fields and establishment of new ones. The most common crops khat is replacing are maize and enset. The main reason mentioned for not growing khat is the problem with thieves in all sub-villages except in Yudo. Other reasons for giving priority to other crops are shortage of land and lack of irrigation. Some farmers also find sugar-cane cultivation more profitable (Sub-village representatives, 2005).

Toke

The first farmer to grow khat in Toke started eight years ago and the size of the khat lands in Toke ranges from 250 to 4500 m². There are around 15 farmers (around 15 %) who gain their main income from khat. Most of the khat in Toke is irrigated and harvested three times a year.

Cash crops in Toke are, apart from khat, sugarcane, sweet potato and coffee, but new khat fields are mainly established on lands previously covered by maize and enset (Sub-village representative 1, 2005).

Kombolcha

The first khat in Kombolcha was planted four years ago and at the time of the study there are 50 farmers who grow khat. Most of them have plots of 250-500 m², but there are around ten farmers who grow khat on plots covering 2000-3000 m². Most of the khat in Kombolcha is non-irrigated and can be harvested two times in a year.

Other important cash crops in Kombolcha sub-village are sweet potato, potato and maize. The extension of khat cultivation decreases the amount of maize, enset and vegetables in the area (Sub-village representative 2, 2005).

Yudo

Khat has been grown in Yudo for approximately seven to eight years. The size of the khat-fields in the sub-village varies from 1000 m² to 6000 m². At the time of the study there are 23 farmers (out of 90) growing khat and there is no means to irrigate.

The most important cash crops are wheat, potato, maize and teff. The expansion of khat in Yudo takes place at the expense of maize, potato and wheat (Sub-village representative 4, 2005).

Chofere

In Chofere khat has been grown for the last three to four years. The farmers with the largest plots have around 100 to 150 stems, approximately 50 – 75 m². (Farmers' DOIT-AR coordinator, 2005). Out of totally around 100 households in Chofere there are nine farmers who grow khat and there are several farmers starting up or planning to grow khat. In Chofere there are no means of irrigation.

In Chofere other cash crops found are potato, teff, wheat and maize and khat is most commonly replacing enset (Sub-village representative 3, 2005).

The three families included in the study are found in the sub-villages Toke, Kombolcha and Yudo, respectively.

5.3. PROCESS WITH FARMERS – THE THREE FARMS

Note: When reading the following paragraphs it could be useful to bear in mind that in Ethiopia almost everyone is reluctant, not to talk freely, but to tell exact figures about the size of their land, their income and other issues that could make them loose something to the government. The figures of land size, income etc should therefore be seen as approximate.

FARMER 1

General description of household and farm

Farmer 1 and his wife live in Kombolcha sub-village. Farmer 1 was born in the area but his wife moved here when they got married a few years ago. At the time of the marriage they received a plot of land from his father, but since he is the youngest of his family, the size of the land left for him was small. Farmer 1 and his wife are Oromic Muslims, are both 27 years of age and have a 6 month old daughter. Together with them in the house there are five "dependents" living. These include his brothers and sisters and also a few workers who help with the farming. The salary of the workers is 20 birr (around 2 US Dollar) per month.

Figure 7. Khat farmer in a khat field

The size of the farm is 12 000 m², of which 2000 m² is Farmer 1's own land. The rest is so called shared land (leased land) which means that it is owned by someone else. There are seven different owners of his land, of which the owner of the khat land seems to be most influential. The owners let him cultivate the share land and in return they receive half the profits, which he has to pay either in money or in the produce of the land. The annual tax is paid by the owner, but apart from that he does not interfere much in the management of the land. Farmer 1 is free to make the crop selection, but he has a responsibility towards the owner to get a decent outcome from the land. If the harvest is not good, the owner might look for another farmer to cultivate his land. This puts a pressure on the farmer and leaves him with a sense of insecurity. For example this year when the maize harvest failed due to insufficient fertilizers, he was not sure if he would be permitted to retain the user rights.

Apart from maize, which covers the largest part of the land, potato, teff and khat are grown. In the homestead there are also some enset trees. Farmer 1 has bee-hives for

honey production, two milking cows, one calve, donkeys and a goat. He has also bought oxen for “fattening”, which means that he feeds them and then sells them.

The main constraint for the farming is mentioned to be the lack of water for irrigation, which is a strong wish for the future. The irrigation system in the Wondo Genet area can be extended to reach farmers in Kombolcha. This is planned to be included in one of the DOIT-AR projects.

Khat

Three years ago Farmer 1 started growing khat and it is now covering an area of 4000 m². Before the introduction of khat the land was used for maize and teff.

Input

When khat first was planted on his farm the sticklings were bought from another farmer. The khat field was later extended by taking sticklings from the original trees. This is considered to be fairly easily done. He gained knowledge about khat cultivation from experienced farmers in the area.

Fertilizers used include manure and residues from the household and last year they also bought an additional 15 carts (garis) of manure. The soil is worked up to eight times in a year and for one round of digging 16 man days are needed.

There is a problem with worms on the khat and Malathione is used to kill them. A second purpose of using pesticides is to increase the growth of the khat so that it can be harvested earlier. For this DDT is most commonly used soon after harvesting if there is no rain. Last year Farmer 1 used pesticides three times and the DDT and Malathione was bought from a shop in Basha, a nearby town.

The farmer has a problem with thieves stealing his khat and he has to watch it continuously. Before he used to live in another place, but since the khat was introduced he moved to a house situated in connection to the khat field. No one is allowed to enter the khat field un-attended, not even the workers. There is a small watch-tower in the field where the farmer, when the khat reaches harvestable size, usually spends the night with his rifle.

In the khat field some stems of enset are planted. Apart from being an important food crop it has a good water holding capacity and provides water for the khat during the dry season. Because of its size and reddish colour the enset also can, especially during the night, be mixed up with human beings and thus keep away some thieves. The red khat serves the same purpose.

Input - summary

Sticklings: *from another farmer*
Fertilizer: *manure from house + 15 garis/year (150 birr)*
Pesticides: *DDT and Malathione from shop in Basha (250 birr/year)*

Work: *- digging, weeding and adding manure around nine times in a year (80 birr for workers digging the field, ~ 16 MD)*
- watching for thieves every night

Output and sale
Three times a year the khat is harvested and the quality is called "magala" (reddish). There is also some "key" (red khat). The income from one harvest is on average 2600 birr which he has to share with the owner of the land. This means he gets around 1300 birr three times a year.

A trader comes to look at the field and names a price for the whole field. The negotiations are run by a middle-man which is another local farmer. Farmer 1 is also acting as a middle-man for another farmer and there are a few well established middle-men in the area. The middle-man is paid by the trader, even though he also expects some drinks or food from the farmer.

The trader coming to the field prepares bundles, sorbas. From the last harvest Farmer 1 got 2600 birr for the field and the trader could make 1474 sorbas (=1.8 birr per sorba). The price he receives for his field varies with the season, sometimes he gets as much as 3000-3500 birr during the peak-period in September. The bundles are taken to Basha, from where the khat is further transported to places like Addis Ababa, Nasret and Asella.

Apart from the high income from the khat the farmer says the plants nourish the soil.

Chewing
Farmer 1 and his wife are non chewers, but the dependent workers seem to get a part of their payment in khat.

Influence
The only person influencing Farmer 1 in his khat cultivation is the owner of the main part of his land, including the khat land. He keeps a pressure on Farmer 1 to work the khat well, protect it from thieves etc, to get a high income. Farmer 1, who is known to have a lot of knowledge on khat, gives advice to other khat farmers in the area.

FARMER 2
General description of household and farm
Farmer 2 is a relatively new farmer, around 26 years old. He inherited the land in the sub-village Yudo from his father when he got married one and a half years ago. His wife is 25 years and they live with their two year old daughter in a house Farmer 2 has built himself. The farmer's mother lives together with them and in the surrounding huts other members of the family are found, such as Farmer 2's father and grand mother, his father's second wife and her children. The fields surrounding his belong to his father and mother and they help each other with the farming. There is a family mosque in the compound.

The size of the family's farmland is around 8000 m^2 and the crops grown are khat, potato, maize, teff and enset. There are also a few bee hives in the home garden and in the future

they plan to cultivate avocado, banana and coffee. The farmland has a good quality, but there is a problem with erosion with big amounts of soil being washed away during the rainy season. Farmer 2 tries to prevent this by building walls and planting a big grass on them.
The young family does not have any animals, but they plan to buy for the future.

Khat
The family has around 3000 stems of khat, approximately 700 m² (author's estimation). Part of the khat is one year old and the other part is newly planted.

Input
The first stems of khat were planted as sticklings which Farmer 2 got cheap from neighbours.

Manure from the household is used as fertilizers and is added every now and then. In addition he leaves old leaves of khat in the field which is mixed with the soil.

Three to six times a year the khat field is dug and weeded, more often if there is rain. During the dry season digging is not considered to be good, since the roots will dry out.

To kill worms eating the khat leaves, the pesticide Malathion is used. Farmer 2 gets advice on pests from the Agricultural Bureau in Shashamene and buys pesticides from a local trader. The family is Oromo and even though they live in SNNPR, the farmer can go to the Agricultural Bureau in Shashamene in Oromo region to get advice and subsidized pesticides for khat. Malathione is also considered to increase shoot length and is sometimes added directly after harvest. Last year he used Malathione on the khat twice.

Input - summary
Sticklings: *From neighbours + buying (cheap)*
Fertilizer: *From household*
Pesticides: *Malathion from Agricultural Bureau in Shashamene (120 birr/year)*
Work: *- Digging and weeding during rainy season, up to six times a year*

Output and sale
The quality of Farmer 2's khat is called Magala (reddish). He and his family harvest the khat three times a year and the income is around 125 birr per harvest. Often small amounts of khat are sold for neighbours etc every now and then. Some khat is also sold if the family needs "fast" money, for example if someone gets sick and requires medicine. Recently the farmer got malaria and in order to get money for the treatment, he sold some khat in Shashamene.

Most often there is a local trader, a middle-man, who comes to the field to collect the khat. He prepares bundles of the khat, wraps them in enset leaves and labels them with the name of the trader before the transport to Basha. From Basha the khat is sold to a trader who transports it out of the region. Once this year Farmer 2 tried to go to Basha by himself to sell the khat, but he thought this didn't bring as much income as when he let a

trader do it. He had to pay for the transport, accommodation in Basha and also for renting a khat-shop for the selling. From his 700 m² of khat he got 72 birr left, compared to 125 last year. The income is expected to increase when the trees mature.

Farmer 2 said that the khat is good on his land to prevent erosion and that it is drought resistant.

Chewing
Farmer 2 is chewing on weekends, his wife not, but she is said to be free to do so if she wishes.

Influence
Before he started to cultivate khat Farmer 2 heard about a farmer who got a high income from his khat field. Farmer 2 became interested and asked him for advice. The khat farmer did not want to share ideas with him because he feared competition, so Farmer 2 started as a day-labourer for him and learned about khat cultivation through observation. Finally he also got his first sticklings from that farmer.

FARMER 3
General description of household and farm
Farmer 3 and her husband have been living in Toke for 14 years. They are Christian Orthodox, belong to the Sidama tribe and live in a fairly big house with a tin roof. They have seven children, five of them still live at home. One of them is married and since both he and his wife are students, they and their child are also included in the household.

The family owns two cows and two goats.

Farmer 3 and her husband have around 1.5 ha of farmland, part of it they got from the kebele in the 70's and part of it they bought from other farmers in 1991. The main crops grown are khat, teff and maize and they also have some coffee and enset.

Khat
Farmer 3 and her husband were the first to plant khat in Toke eight years ago and before they moved here they had been growing khat for 20 years in another area. At the time of the study they have three fields of khat, one that is little more than one year old and two that were planted eight years ago. The total area covered by khat is 4500 m².

Figure 8. Eight year old khat

Input
The khat plants have a good capacity to re-generate and when the khat field is extended, new sticklings are taken from the field. The main fertilizer used is manure from the farm, but sometimes synthetic fertilizer is used. During harvest leaves that are not preferable to chew are left on the ground as fertilizer.

The pesticide Malathione is bought from a shop in the nearby village and is used to get rid of the "khat-worm" and also black spots affecting the lower parts of the bush. The pesticide is applied twice a year. When available, spraying equipment is rented from someone in the PA, but most often the pesticide is applied using branches of trees with leaves as a brush to "paint" the khat with pesticide.

Digging is made every second week during the rainy season and once a month during dry periods. The crop is irrigated once or twice a year.

Since theft is common, the khat has to be monitored continuously. During the day this is the duty of the wife who is usually around anyway, and at night it is done by the husband or the oldest son.

Input - summary

Sticklings:	*From his own field (vegetative re-generation)*
Fertilizer:	*Manure + artificial fertilizer (28 birr/year)*
Pesticides:	*Malathion from shop in Wosha*
Work:	*- Digging – if rain; every 15:th day, otherwise once a month (1 digging = 8 MD work)* *- Watching for thieves every night* *- Irrigation 1-2 times a year*

Output and sale
1600 – 2400 birr is gained per harvest and usually the khat can be picked three times in a year. Most often a trader comes from Basha to collect the khat, but sometimes the oldest son goes there to sell it for the family. The family have relatives involved in the khat trade in Basha and feel they get good help from them with the relations with traders. The best profit is made during the dry season when the family has an advantage in the access to irrigation. From Basha it is transported to Addis and other places and it is labeled as "Wondo Khat" or "Bellichie".

Chewing
The family are non-chewers.

Influence
The most important for Farmer 3's khat farming has been his father. He had a khat farm in another area and was the one teaching Farmer 3 about the cultivation. He also got sticklings from his father. Now Farmer 3 is the one influencing people around him, he is considered to be the expert on khat in Toke.

Table 1. The farmers and their khat

General	Farmer 1	Farmer 2	Farmer 3
Size of household	8	4	9
Religion and ethnicity	Muslim, Oromo	Muslim, Oromo	Orthodox, Sidama
Size of farm land	12 000 m² (2000 m² his own and 10 000 m² share land)	8000 m²	1.5 ha
Crops	khat, maize, teff, potato, enset	khat, maize, teff, potato, enset, fruit trees, coffee	khat, maize, teff, potato, enset, fruit trees, coffee
Other productive units	2 cows, calf, donkey, goat	bee-hives	2 cows, 2 goats
Khat			
Size of khat field	4000 m²	ca 700 m² (3000 stems)	4500 m²
Time of growing khat	3 years	2 years	8 years (+12 years experience from other place)
Learn about khat from:	other farmers	other farmers	his father
Quality	Magala, Key	Magala	Magala
Fertilizers	Manure, crop residues	Manure, crop residues	Manure, crop residues
Pesticides	Malathione, DDT	Malathione	Malathione
Irrigation	no	no	yes
Output/year	3 * 2600 birr (half for land owner)	3* 125 birr + small harvest occasionally	3 * 1600-2400 birr
Constraints	thieves, lack of irrigation	erosion	thieves
Advantage of khat	Income, nourishes soil	Income ("insurance"), prevents erosion	Income
Chewing	no	yes, but not the wife	no

5.4. DIFFERENT QUALITIES OF KHAT AND IRRIGATION

The most preferable khat in the area is Magala, reddish khat. This variety has a medium stimulating effect and medium water content. There is also some white khat, which has a very low value due to its weakness. A few chewers prefer the red khat which makes a person reach *merqana* (the excitation stage) fast, but most people say it has a bad taste and also that it can cause a head-ache. Another reason why the traders don't buy red khat might be that the low water content makes it difficult to keep it fresh during transport.

Accordingly, most farmers grow Magala, but usually in every khat field there are a few stems of white and red khat. The reasons for this might be environmental and physical

factors of the soil in the specific plot, availability of water etc. There also seems to be some variety within the khat species itself.

Main factors affecting the quality of khat (according to farmers):

- Soil
- Rainfall and irrigation
- Amount of work put in, mainly digging – the more the better
- Fertilizers – the more the better
- Pesticides – the more the better

Irrigation system in the area

There is an old irrigation system in the area, introduced by one of the big landlords during the time of Haile Selassie. The land lord relative of the emperor first built it and then organized the people in the area to continue and to maintain it. The irrigation system made the introduction and expansion of commercial agriculture possible (Wolde, 2003). Today this system provides people close to the college with water during the dry season and the people work together with leading the water to the different areas. Of the sub-villages in Gotu Onoma, most farmers in Toke have access to the system and also some in Kombolcha (Zewdie, 2005).

Irrigation on khat

In Toke sub-village, all khat-farmers use irrigation. Now everyone in Toke has access to irrigation, which was not the case just a few years ago. Farmers with access to irrigation have to face the trade-off between the number of harvests per year and the price they receive. If the khat has high water content as the result of much irrigation the price will be low. The advantage with irrigation is, though, that farmers who have access to irrigation can harvest khat during the dry season when the majority of khat farmers in Ethiopia cannot. At this time the supply is low and the price of the khat is high. This can bring a big advantage in income, but still farmers say it is important not to irrigate too much (Bar owner, 2005). Apart from being weak in stimulation, khat with much water can grow too fast, become soft and high and collapse. This depends on the variety, some kinds of khat drop their leaves when they become too heavy (Driver, 2006). The khat should not be dug during the dry season, because then the rather superficial roots could be damaged by the sun.

5.5. PESTS AND USE OF PESTICIDES ON KHAT

Khat larvae

The pest that is seen as the biggest problem on khat is a worm which develops into a night-flying insect. In the first stage, when the larva is small, it eats the softest parts of the new and most tender leaves (the top shoots of the khat). When it grows it can eat also the “leaf skeleton” and finally the whole leaf.

For treatment of the worm, Malathione is advisable. Also Sumatine can be used.

Fungus, “smut”
Not so severe, but very common on khat is a fungus, which can be detected as black dots on the leaves. Farmers don’t see this as a big problem because it attacks the lower parts of the tree and thus not the leaves that will be harvested. Those leaves fall to the ground and work as compost, which can serve a good nutritional purpose, according to the farmers.

No pesticide is necessary.

Soft-scale
A not so common but severe problem is the ”Soft-scale” or the ”Khat-cancer” (farmers’ name). Insects build shields attacked to the stem and suck liquid out of the stem. This causes drying and the plant will finally die because of drying up and loss of carbohydrate.

Recommended pesticide to get rid of Soft-scale is a systemic pesticide that enters the fluid part of the plant, such as Dimetoide. A contact chemical that also is possible to use is Sumatine (Experts on pesticides, 2005).

The most common pesticides used on khat by the three farmers are Malathione and DDT. (For information on them, see appendix 4)

5.6. TRADE WAYS AND TAXES

12 years ago Wondo Genet khat was not well known in other areas, but one trader started to transport it to Nasret and now the trade routes to Addis Ababa, Mojjo, Debre Zeit etc are well established. The “Wondo Bellechie” (or “Kella Bellechie”) is well known and considered as one of the best qualities in the country. It is grown in the hilly area close to Kella, is harvested only once in two years and has a high value. Besides the actual selling of khat, the trade is considered to be good for the economy of the area also in an indirect way. The trade makes people come to area and spend money on food, hotels etc.

The town Basha is the regional “khat centre”. Most of the khat that is transported out of the area is first taken to Basha, to be sold to the traders coming from Addis Ababa and other places. The khat is harvested around mid-day and driven to Basha. Most often there is a local trader who comes to the farm, pays the farmer a sum for the whole field, prepares bundles and transports them to Basha. Occasionally farmers go to Basha themselves to sell the khat. This is considered to be difficult for them, unless they are sufficiently confident and have skills in negotiation. Farmers who are not experienced often make a bad deal.

In the evening, around 8, when all the khat has arrived there is a call for the market to start. There are middle-men who help the farmers or the local traders that come to Basha to sell the khat. The middle-men pay a fee to the government to keep a shop (a place at the open market) for selling the khat. They facilitate contacts between sellers and traders and serve as negotiators. They are paid per bundle sold by the local trader. Some middle-men also serve as local traders and some farmers help each other with the negotiating.

Around mid-night (1 o'clock), the khat is driven to Addis Ababa, Nasret, Mojjo, Debre Zeit etc (including towns along the way) where it is sold the following day. From Basha every day there are five Izusus (trucks) going to Addis, three to Nasret, one to Bale and one to Asella. Traders are well aware of and check on the demand in order to know the amount they should buy and transport to different places. For example, more khat is consumed on weekends, especially in Addis. When the khat is sold in Addis approximately 24 hours has passed since the harvesting. Transporting during the night is a rather recent phenomenon, just one year before the time of the study fresh khat could not be found in Addis. Due to the high value of fresh khat, fast drivers are preferred.

Estimation; market chain and prices (*Note that this is just an example. It is difficult to get people to tell the exact prices. In addition there are big variations according to the season, supply, demand etc*)

The **farmers** get 20-25 birr/kg if they sell the khat to a local trader who comes to their field. They can also go by themselves to Basha, but most often this is done by the:

local trader who prepares bundles in the field, wrap them in leaves of false banana (enset) and drives the khat to Basha. There he sells the khat with the help of a middle-man who has a "shop" in Basha.

The **middle-man** pays 5 birr/day to the government to keep his business in the open-air market at night. He helps the local trader (occasionally the farmer) to sell the khat e.g. to search customers for him. The local trader pays 50 cents per kg to the middle-man.

Trader: Buys the khat for around 28 birr/kg and transports it out of the region to sell to merchants in Addis etc. When the khat is transported out of the region, the tax is 3 birr/kg (paid at customs point).

When reaching Addis Ababa (Kalidi – "gate of Addis") additional 2 birr/kg is paid. The trader also pays 50 c/kg of khat for the car (if it is not his own). In Addis he might get 40 birr/kg. The profit is then: 40 – 28 (price in Basha) - 3-2 (taxes) - 0.50 (car) = 6.50 birr/kg.

Figure 9. Custom's point, Wosha – Wondo Genet

There is no turn-over tax for local sale and the main winner in the market chain is considered to be the merchant in Addis Ababa who does not have to pay any taxes, only the normal turn-over tax as for any product (Bar-owner, 2005). From the farmers' point of view, the local traders are the ones making the best benefit from the khat. It is common that they sell the khat with a 200% profit.

The ones paying taxes on khat are the traders. As mentioned above, when the khat is transported out of the region the tax per kilo was three birr. To enter Addis Ababa, an additional tax should be paid. Khat is said to be the only commodity taxed in this way, whereas other things are paid for through the declaration. When khat is exported, which is most common in the eastern parts of Ethiopia, a higher tax has to be paid, around five birr per kilo. A considerable amount of khat is also sold in the villages and small towns close to where it is grown.

5.7. LAND POLICY AND SHARE LAND

During the reign of Emperor Haile Selassie the area around Wondo Genet, Gotu Onoma included, belonged to four of his relatives. After his fall in 1971 the Derg[3] distributed the land to the farmers. The big land distribution began after 1974. According to Ethiopian law all land belongs to the state and can not be sold or mortgaged, but in this area land has, to some extent, been purchased since 1991 when the communist regime fell. The fact that all land is the property of the state also means that the state has a responsibility towards the citizens. According to the constitution all peasants and pastoralists have free right of use to land. They pay a tax (around 50 birr per hectare and year) and they are also guaranteed the improvements they make to the land. Nowadays when scarcity of land is becoming a large problem in many parts of the country, it is uncertain how the right to land can be practiced in reality and what effect it might have on tenure security of those currently in possession of land. It is also unclear how much land peasants are entitled to. (Haogos *et al*., 1999)

In the study area the practice of leasing land is rather common. That means that a farmer who has no or little land can cultivate the land for someone else. He is then responsible for the productivity of the land and has to pay part of the outcome, either in cash or crop, to the owner (Kebele leader, 2005). Khat is a ”safe bet” when it comes to the practice of leasing land in the sense that the farmer more easily can guarantee the owner of the land a high income and therefore increase the possibilities to retain the leasehold (Kebele leader, 2005).

5.8. GOVERNMENTAL POLICIES ON KHAT

In Ethiopia there are no official laws prohibiting khat, except in the region Tigray where khat is illegal. Most governmental officials say they are discouraging khat cultivation. Often they don’t even admit knowing anything about khat cultivation in the area. The fact that khat is seen as a drug and is prohibited in many countries forces the government to be restrictive to the cultivation. At the same time large amounts of taxes are collected from the khat trade and many farmers and traders as well as the government depend on it.

The PA Gotu Onoma is very diverse in ethnicity and thus also politically. During the Derg (1971-1991) Gotu Onoma as well as the surrounding PAs, belonged to Oromia Region and thus was governed from another administrative area. Since many people in Gotu Onoma are Oromos, they are still more influenced from Oromo Region. Officially, they should turn to SNNPR authorities for agricultural advice etc, but that is not how it works in reality. In addition, most Oromos living there now are new-comers, before the

[3] Communism regime in Ethiopia 1971-1991 (NE, 2006)

fall of the Derg in 1991 the area was inhabited by other tribes, mainly Kambatas, Woleitas and Hadijas. Now the Oromic population in the PA is said to be rather influential in the area.

The federal law says that there should be agricultural advisers in all parts of the country and there used to be also in Gotu Onoma. But at the time of the study those ”extension workers” were away for some months and no one knew when they would be back. Because of this farmers who want agricultural advice have to go to town. One of the Oromic farmers says he can get advice on khat cultivation from the Agricultural Bureau in Shashamene, the nearby town. Even though this farmer lives in SNNPR, he is Oromo and not more than 15 years ago the part of the kebele where he lives belonged to Oromo Region, where Shashamene is situated.

5.9. CHEWING

Who are the chewers?

In Gotu Onoma there are chewers from all the seven tribes and religions, but it is more common among Muslims and less so among Protestants. No religious leaders encourage khat chewing, but there are harder restrictions and control from the Protestant and Orthodox church than from the mosque. Some Muslims use khat when praying, to increase concentration and facilitate contact with Allah.

More men than women are chewing, but most people say it is accepted for women to chew. Most female chewers are found among the Muslims and in the towns.

Khat is considered to be a less harmful drug than alcohol. There is a saying among people that “One policeman can control ten chewers but ten policemen cannot control one drunkard”, which describes how most people compare the two most common drugs in the area.

Most people think the number of chewers will continue to increase in the future. There is a connection drawn between being an employed day-labourer and being a khat chewer (Gotu Onoma Women’s representative, 2006).

Advantages of khat (from interviews)

Khat chewing is said to give energy for work and efficiency, e.g. drivers can stay awake and drive for long distances without taking rest. Many students use khat to increase concentration for studying.

Khat-chewing is thought of as a “mediator”, that after chewing people can discuss and solve problems between them in a more peaceful way.

In the study-area khat is sometimes used for witch-craft, for example if a person is affected by the devil. Khat is be mixed with water by a “witch” and given to that person to drink in order to cure him or her.

Medicinal effects:
- treat hypertension
- treat diarrhoea
- cure head-ache
- cure stomach-ache
- kill amoeba in stomach

Interviewees also mentioned khat as a preventive method from HIV/Aids, as it can decrease the sexual desire in chewers.

Disadvantages of khat (from interviews)

Health aspects:

The harmful effect, as well as the benefits, of khat is said to vary from person to person. The following effects are mentioned more commonly and is said to be true for most regular chewers, though:

One of the most serious problems with chewing is considered to be that if chewing every day, a person can not function properly without khat. This is connected to the addictive properties of khat and the withdrawal also includes depression and listlessness.

Most chewers are said to be thin, because of the appetite suppression character of khat. Most harmful is it for poor people to chew, because they can not get proper food (Gotu Onoma Women's representative, 2006). Khat is considered as a common cause of stomach-ache and regular chewers also suffer from tooth decay.

Khat is considered to be "not good for the mind" in general.

It is not uncommon that chewers use cigarettes when chewing khat. Some people use alcohol after the chewing in order to break "merqana" (excitation stage) and be able to sleep. In the area of the study those "assecoires" do not seem to be very common, though. Alcohol is said to be used mainly by non-regular chewers, that means people who chew khat only for enjoyment, usually on weekends.

And what effect does khat have on sexual ability then? The only female interviewee who felt free to talk about sex said that chewing decreases the sexual ability of women, but for men it can work either way. If the man keeps sex in mind and concentrates his thoughts on that when he chews, he can have sex also after chewing. If people use alcohol after khat, it might increase the need for sex (Bar-owner, 2005). During the study it was observed that places in towns where people go to chew often is the same as brothels where many traders spend the afternoon, so to some extent khat can be connected to prostitution and the spreading of HIV/AIDS.

Pesticides

Pesticides make the khat look attractive, but an experienced chewer doesn't want pesticides on the khat. Many chewers claim to be "immune to DDT" and when they hear about the possible toxic effects of DDT, e.g. on the reproductive ability, a common answer is: "But in this area almost everyone is a chewer and everyone has many kids…"

Figure 10. Khat shop in Wosha, Wondo Genet

Socio-economic aspects:
People who chew every day will spend a big part of their income on khat. Khat is said to cause arguments within some families because children steal money to able to buy khat. Women say it is even more severe if the husband is a khat user, because he is in charge of the family's money and can use it on khat instead of on food. (Gotu Onoma Women's Representative, 2006).

5.10. KHAT VS SUGARCANE

The only now existing crop in the study area that can compete with khat in profitability is sugar-cane. The soil in Gotu Onoma is considered to be suitable for sugar-cane, especially down in Toke, but it is restricted by the limited availability of irrigation. If the sugar-cane does not get water, it becomes hollow and of low value (Kebele leader, 2005).

There are different ideas on which crop gives the highest income in the long run, but it seems that more people vote for khat. Sugar-cane is harvested every 18:th month and gives a big sum of money at a time, whereas the income from khat comes two or three times in a year. The common view is that sugar-cane is more work-demanding than khat, because of the intense irrigation it requires. In the area of Wondo Genet there are warthogs eating sugar-cane (Driver, 2006).

5.11. INTERCROPPING

Intercropping is not considered to be an option in the study area, apart from a small number of enset trees the farmers plant in the khat field. The limitation in farmland makes farmers prioritize khat for other crops. They don't want any competitors to the high value khat. In other parts of the country khat is grown together with cereals (Feyisa, 2001), but all three farmers included in the study mentioned maize to ruin the khat because of pollen that causes fungus on the leaves of the khat. Farmer 2 though, who still has rather small khat plants, grows maize together with the khat. He is planning to harvest the maize before it grows big. Farmer 2 is thinking of growing vegetables together with khat in the future.

5.12. PROCESS WITH FARMERS 2 – FINAL DISCUSSION

Here follows a list of main issues discussed with the farmers as a conclusion of the process. For more detailed list; see appendix 5.

- Influences in decision-making (Venn-diagram)
- Difference in wealth; khat growers/non-khat growers?
- Does khat increase security?
- How far in the future do you plan the farming?
- Thieves – solution? Influence on work-load?
- Religion – change in importance?
- The relation with traders
- Pesticides – some advice on Malathione, DDT etc
- Khat effect on soil?
- Intercropping
- Market-dependency – danger?
- Future of khat;
  - personal?
  - regional?

- Wishes for changes in general in connection to khat?
- How reduce vulnerability:
  - relations with traders?
  - pesticide use?
  - chewing?
  - work-load?
  - thieves?

"Influence summary"

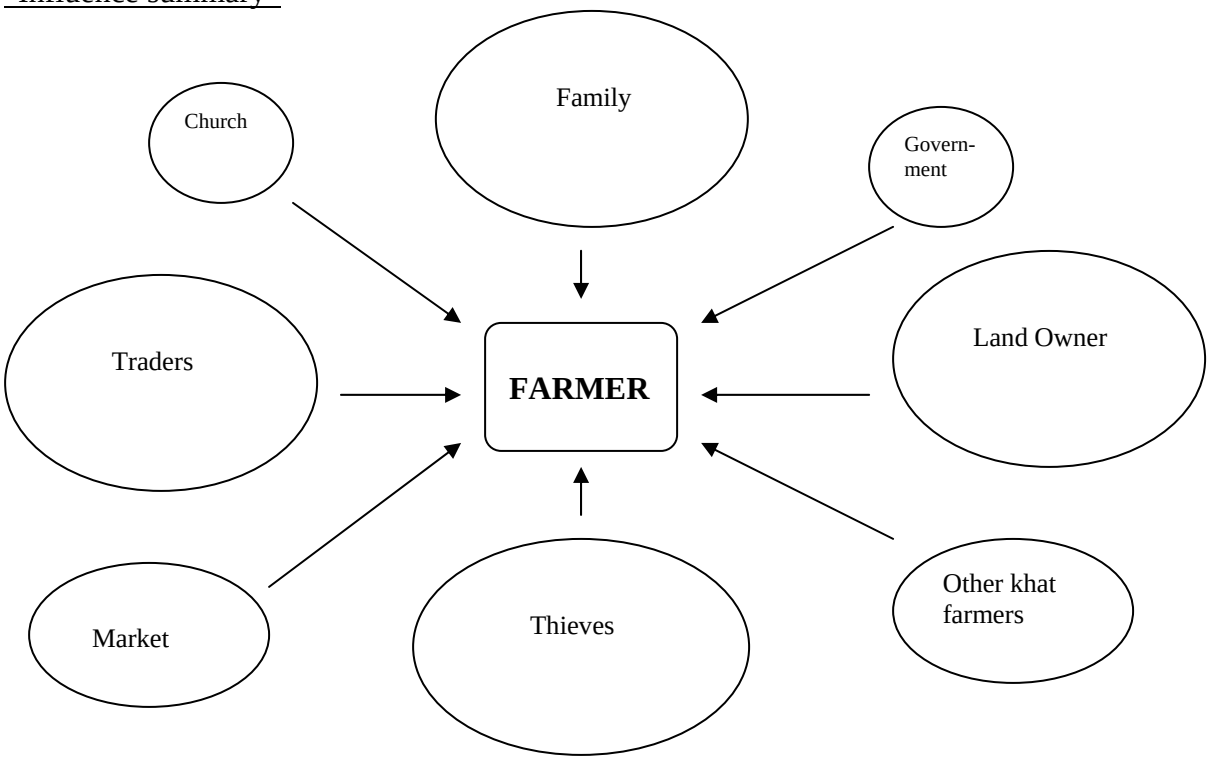

Figure 11. Diagram showing influences on the farmers. The size of the circles indicates the magnitude of influence.

Wishes for the future

Farmer 1

Farmer 1 wishes irrigation for the future, then he estimates to be able to harvest khat five times per year. This would reduce the stimulating effect and the work load would increase, but the total income would be greater.

Farmer 1 has an idea to plant some thorny bushes as a fence as an attempt to keep away thieves from the khat. A dry fence would be good in the sense that it does not compete with the khat for water.

Khat is considered to be "a safe bet" in order to keep the share land, so he will try to expand the cultivation of the bush.

Farmer 1 is hoping to be able to buy land on his own in the future, not to be dependent on another owner and have to share the income with him. He says 1.2 hectare would be enough for his family. He also wishes to expand the khat field.

Another plan is to build an extra house.

One thing that could improve the situation for Farmer 1 is to decrease the problem with the thieves. There have been discussions in the area about building some kind of co-operative for watching the khat fields. Farmer 1 is planning to build a watch-tower in the

field and put a torch on, so that the thieves will believe there is someone, even if Farmer 1 himself is asleep.

Farmer 2
Farmer 2's khat field is still rather new, but in a few years when it has grown it will generate a larger income.

He has plans to grow other crops in the khat field like carrots, cauliflower or pepper.

An improvement in the relations with traders, who Farmer 2 thinks gains too large a portion of the income from khat, could be to build some kind of cooperative for selling. The khat farmers in Yudo have been discussing this. Farmer 2 says this could make them stronger and more confident in the negotiations with the traders.

One of the best khat in whole Ethiopia comes from a place around 10 kilometres far from Yudo. That khat is not irrigated, is grows slowly and has a highly stimulating effect. This khat is called "Kella Bellechie" and since there is no irrigation in Yudo, Farmer 2 is dreaming about that his khat will become a new Kella Bellechie, or "Yudo Bellechie" as he says.

Farmer 3
Farmer 3 and her husband are rather old and their wish for the future is to give their children a good education and secure their economy and livelihood.

Farmer 3's husband is reasonalby satisfied with the situation today and does not see anything in particular that he wants to change. One thing could be improved though and that is, in order to decrease the problem with thieves, to intensify the cooperation with the kebele soldiers who have guns.

The income from khat could be higher if they transported and sold the khat independently. One possibility is to rent a contract car together with other farmers. There might be a high risk with this though, depending on the market prices and hard negotiators in town.

The farmer would like to have his own sprayer for pesticides, which would make the use of pesticides more efficiently and safely.

Common opinions among the three farming families about khat cultivation
Khat compared with other crops
Khat exceeds all other crops grown by the three farmers in terms of work-load, water demand and use of pesticides and fertilizers.

Positive
- High and steady source of income
- Cultivation is easy to learn
- Khat is good for the soil quality
- Khat prevents erosion and is drought resistant

- "Khat is our future"

The three wives also think it was a good decision to start growing khat.

Negative

- Thieves, which force farmers to guard every night and also leading to a severe social impact.
- Too much chewing is not good.

Common thoughts about future among the three farming families

- Extended irrigation system would be good
- Extension support on pesticides is another wish among the farmers
- There should be a common effort among the farmers to solve the thief-problem
- Common ground for selling that makes farmers stronger towards traders would increase farmers' income

6. DISCUSSION

The point of departure for the discussion is how khat affects farmers' vulnerability.

6.1. CULTIVATION OF KHAT IN THE AREA

Reasons for increased cultivation

As Wolde (2003) states the shift to cash-cropping in general is a result of the agricultural intensification due to the high population pressure. Small plots of land that are supposed to feed big families force people to consider the best options for income generation. Their field might not give enough food throughout the year and cash-cropping is often seen as the best option. As long as there is food to reasonable prices it might be better to grow something that brings money rather then to rely fully on food crops for home-consumption. Khat seems to be one of the best cash-cropping options of today. In addition is the area favourable for cash-cropping due to fertile soils and also the abundancy of water – both from rainfall and irrigation. Another factor favouring cash-cropping is the comparably well developed infrastructure of the area. Even better roads and transporting possibilities in the future might increase the vialbility of cash-crops even more.

There are various suggestions on why the demand of khat is increasing. Some people say the growing khat market in the area is a result of that the religions become "looser" in their rules. According to sharia, the Muslim law, khat is a drug and thus prohibited, but of course that is all a matter of interpretation of the Koran. It must be, considering that many Muslims in Ethiopia use khat to facilitate prayer and contact with Allah. The Orthodox church seems to decrease in importance. Secularization ("weak" compared to the one in Europe) and "modernization" is spreading, especially among young people and the rules of the church seem to become less important. This might have gone further here in this "accepting environment" compared to many other parts of Ethiopia that are more uniform in religion and ethnicity. In Amhara region north of Addis Ababa where most people are Orthodox followers, the laws of the church seem to be more strictly followed,

but even there times are changing. Young people in towns are chewing more khat now than ten years ago (Almqvist *et al.*, 2005).

Most Protestants in the area are fairly ”new” Christians. Most of them used to belong to some kind of paganism and converted in the 60’s when a Finish mission was established in the area. This branch of Protestantism seems to be a bit different form the one in towns and cities where many Protestants are living very strictly without any drugs.

Besides the religion, people claim to become more ”modern” and spend more leisure-time in town. The increase of chewing in the area of Wondo Genet can also be a result of the above mentioned sense of acceptance that comes with the ”mixed ethnicity” of people and religions in the area. Also the spreading unemployment can be to blame, where khat is used to kill time.

Why khat as cash-crop?

Why do farmers choose to grow khat instead of other cash-crops then? In Toke, where irrigation is available, there is the possibility of choosing sugarcane instead of khat. As being the other big cash-crop in the area, it is also increasing among the farmers. The choice between sugar-cane and khat depends on the preferences of the farmer. Since it is very difficult to get exact information on prices and figures, it is nearly impossible to compare the income from the two. They seem to be similar in profitability, but it also depends on what is considered to be profitable. Some farmers argue that it is better to get a big amount of money on one occasion, which is every 18:th month for sugar-cane. Others prefer khat which gives a steady income, two or three times in a year. So it all depends on the preferences and how profitability is defined by farmers. It is not always the average income per year that counts.

Figure 12. Sugarcane, enset and khat

Khat has an advantage over other crops, because it can be harvested at almost any time if needed. Sugarcane has a very low value if harvested too early and of course khat also gives a better income if it is left to grow longer, but not to the same extent.

Once planted, khat gives a regular harvest for many years. Sugar-cane is said to be more labour intensive, but it depends on what is

considered to generate a high work-load. It is not always the amount of time put into the farming that counts. Khat growers spend many nights in the khat field with little or no sleep, but not all see this as a big work input even if it makes them tired. What is considered to be work can be discussed and opinions differ.

An advantage with sugarcane over khat is that it can stay fresh longer after harvesting and the farmer is not so dependent on the traders to buy it immediately as is the case with khat.

Of course there is also the possibility to grow other crops than khat and sugarcane for selling and, to some extent, farmers also do. The problem is though, that markets are not sufficiently developed for other crops. Several projects in different parts of the country are aiming at creating processing and export of vegetables and maybe that could change the priorities of the farmers in Gotu Onoma in the future. Especially the ones with access to irrigation have the possibility to grow tomatoes and other vegetables.

Irrigation and qualities

Does it really pay to irrigate the khat? Farmers with access to irrigation have to face the trade-off between irrigation with fast growing and a somewhat weaker khat or to wait for the leaves to get a higher quality. The high quality khat in Wondo Genet comes from the mountains where there is no irrigation. Some is harvested as seldom as every second year. The decision of the farmer seems to depend on what variety he is cultivating and also on how it is cultivated. Most farmers who have irrigation available, will use it to some extent though. It seems to be a big advantage being able to steer the harvest into the price peak-time. The high quality khat in Wondo Genet is called Kella Bellechie and the farmer in Yudo is dreaming of creating a new trade mark with high value. Maybe in the future there will be “Yudo Bellechie” available in the khat market in Addis Ababa and other cities and towns.

There are other areas in Ethiopia where no khat is grown without the use of irrigation, for example in Amhara region in the northern parts of the country (Almqvist *et al*, 2005). This seems to be where khat is recently introduced and the demands on quality are not so far developed and people prefer a bit weaker product. The demand of quality also depends on the destination of the khat. If transported for long distances, it needs longer and stronger stems in order not to dry out. In a study in the east of Ethiopia (Mulatu *et al.*, 1998) farmers stated that khat plots that get sufficient manure need less irrigation. This makes sense to me, because if the khat grows faster from fertilizers the quality should become higher than if it’s made growing fast by water and because of that have a high water content.

6.2. KHAT AND FARMERS’ VULNERABILITY - CULTIVATION

Pesticides

Today the governmental agricultural advisers have very little knowledge about khat, and the farmers say they are the ones teaching the extension workers about khat cultivation. This makes the application of pesticides rather haphazard. As it is now, farmers spray what they can get and often with lacking protective measures. Of course this is very much

a matter of personal economy, but also a lack of knowledge about the poisonous effects and risks of the pesticide. This makes the use of pesticides a big health risk both for farmers spraying and the customers chewing the khat and can be seen as increasing the vulnerability. If the government acknowledged the fact that there are a significant number of farmers cultivating khat and spoke freely about it, there might be more clear advice on how to use pesticides on khat with a more effective use as an outcome. Now farmers follow the principle “the more pesticides the better” and they also say DDT functions as a fertilizer. DDT in itself can most probably not increase the growth of khat, it must be that the DDT kills something or several things restraining the growth, but which the farmer can not see. Anyway DDT stays in the plant for a long time and controls different pests and diseases, but it is not very healthy. Both the chewer and the farmer spraying it should suffer from the poison. DDT is legal for selling only for the purpose of malaria prevention, but there doesn’t seem to be much control on the purpose of the purchase.

Governmental policies and land security

Often the government officials do not admit knowing anything about khat cultivation. There seems to be a common fear of the officials higher up in the hierarchy and understandably governmental employees do what they can in order to keep their position and obey the ones powerful enough to fire them or at least make their life difficult. So if the regional government think it is important to keep a ”khat-restrictive approach” to the outside, for example the agricultural bureaus cannot give farmers advice on khat. During the study it turned out that this is not always the case, there are farmers who go to the government for advice. This seems to depend on what tribe they belong to and if they actually get advice on khat cultivation, the most important is not to make it official. As in many other issues in Ethiopia, it is what is being said that matters, not what the more or less obvious ”truth” is. The ambiguous message from the government is understandable, considering the international pressure on Ethiopia because of the big export of the drug at the same time as the country depends very much on the trade of the mild drug. But if the government really wants to discourage the increase of khat, they would probably be more successful in turning to the chewers. If people knew more about the possible health effects of chewing, the intake might decrease and the market would stop growing with today’s rate.

In the paper Conceptualizing Livelihoods of the Extreme Poor (2002) Sultana relates social vulnerability to exclusion, discrimination and lack of protection. It can be argued that to some extent khat cultivation leads to social vulnerability in the sense that khat farmers feel neglected by the government. Even if they say they know more than the officials about khat cultivation and thus don’t expect any advice or help, it can be argued that they are excluded or discriminated because of their choice to grow khat. This can be considered as a bit exaggerated, because this is true also for other crops. It all depends on what the government decides to give priority for at the time. But still, there is a tendency to lack of protection for khat growers, more than with other crops. The main reason for this might be that the government chooses not to see the dangers and hazards with khat cultivation and chewing and therefore does not bother to learn about it. If farmers gained advice for example on how to handle pesticides on khat, it would reduce the ”trial- and error-cultivation” and the associated health risks.

Considering the ethnic diversity of the area, it is very difficult for an outsider (probably even for the people living there) to see the political structure and how it would be possible to create democracy in the area. Nevertheless, this might be a prerequisite to develop a uniform and clear policy also on khat. A system for agricultural advice that is working properly with equal rights for all and good communication between farmers and extension workers would also enable this.

In the study area the farmers do not seem to be afraid of loosing their land to the government as is the case for example in east of Ethiopia where khat increases the likelihood of keeping the land (Feyisa, 2001). In Wondo Genet this is true for the practice of leased land, though. The big concern among the farmers in Gotu Onoma is more about the scarcity of land and how it can be enough for their children. In this reality the farmers face, where buying of land is actually possible, money is a way of securing the future of the family. Khat, which gives a high income, can serve this purpose. The lack of land and the uneven distribution contradicts the goals of the policy where everyone has the right to a piece of land. This federal law does not seem to match with today's dense population and big differences in wealth between people. The current situation with scarcity of land is not sustainable for the coming generation. How this will develop is not easy to predict, but it is likely that people will have to find other ways of securing their livelihood. There are off-farm job-opportunities in the area in connection to the eucalyptus forestry production and the forestry college and many poor farmers are also engaged as daily labourers in food-for-work programmes. But still, the number of people in need of a job is higher and the daily payment for work is low. If the number of opportunities for off-farm work increases in the future, a decline in cash-cropping might be the result.

Trading

A further source of vulnerability in connection to khat is that the khat has to be sold directly after harvesting to reach the consumers in a fresh condition. This makes the farmers depend very much on traders and that they give them the wished payment for the khat. The traders are in a good position to negotiate when the farmers have to get the khat sold directly after harvest to get any income at all. This might also be the reason for many farmers letting the traders pay a price for the whole field before they harvest themselves. It makes the farmers more secure, but on the other hand they could probably get a better income if they were more involved in the trading chain. Here some kind of farmers' cooperation or network for khat trade could be a good idea to strengthen farmers towards traders. This could also serve as a common ground for exchanging ideas and learning.

As Wolde (2003) also states in his thesis about cash-cropping in the study area, the non-food nature of cash-crops makes people face problems in times of market failures. This gives khat, as well as sugar-cane, an aspect of increased vulnerability. Chambers (1997) argues that people are more likely to decrease their vulnerability if their livelihoods and farming systems are diverse and complex. All three small scale farmers included in the study have rather diverse farming systems including both khat and a variety of food crops. This makes them able to face times of market failures.

Income and the gender issue

According to Chambers (1997) vulnerability can be decreased by securing food and income flows during the most critical periods like before harvest, during rains etc. This can be true for khat cultivation which gives a steady income throughout the year. In addition, if needed the farmer does not have to wait until the ideal harvesting time.

Figure 13. Market in Wosha, Wondo Genet.

If the farmer needs money a little khat can be harvested and sold, as Farmer 2 did when he needed money for malaria treatment. That khat can work as a kind of insurance in this way, makes it reduce farmers' vulnerability.

When it comes to division of wealth within the family, cash-cropping can be seen as a bigger benefit for men than for women. The man is most often in charge of the family's economy and makes most decisions on how to handle the money. It is not uncommon that women complain that their husbands go to town and use much of the money on drinking etc. Even though the three farmers' wives are positive towards khat cultivation they say women, who most often have the final responsibility for that there is food for the family, commonly prefer to cultivate food crops for home consumption instead of income generating cash-crops. Considering this, it can be argued that women's vulnerability can grow with increased cash-cropping.

The increased khat cultivation is leading to a phasing out of food crops and this can be seen as a threat to food security. The current situation, when the farmers do not grow only khat but other crops like teff and maize and food is available at the market, khat

cultivation is securing the livelihood. But if more farmers in the study area start growing khat, food prices might increase as they have done in the eastern parts of the country (Adenew, 2005). Khat is also mentioned to be more drought resistant than the other crops the farmers grow, which could decrease their vulnerability in years with little rain. This is true only as long as there is food available at the market, that means not in times of totally harvest failure of food crops in the area. It should be kept in mind that food supply is something rather local in the study area.

Beside the three farmers, the cultivation of khat creates job-opportunities for land-less people.

Thieves and workload

A point raised by Sultana (2002) is social vulnerability in connection to the breakdown of social ties and structures. This can be linked to the increase in thefts that comes with khat cultivation and is creating enmity and disturbing neighbourhood relations. This could have serious consequences in a society where neighbours and the community constitute the foundation of social security and where the government often is seen as an enemy. Farmers who have to watch the khat 24 hours also have a heavy workload and are tired day-time and loose working capacity. Thefts are rare in the sub-village Yudo. The reason could be that the population is more uniform there with more sense of solidarity and social control. Apart from the watching the workload on khat all depends on the priorities of the farmer and what level of quality he wants. Opinions are divided on this matter.

The effect of khat on soil quality

As also Wolde (2003) mentions in his thesis, khat with its perennial nature and roots can protect soil from erosion. This can be seen as decreasing vulnerability. In other areas like east Ethiopia it has been observed that khat is depleting the soil (Adenew, 2005). This does not seem to be the case in Gotu Onoma where the farmers let old leaves drop in the field and where they also regularly add natural fertilizers. Like is stated by Almqvist *et al* (2005), a more efficient growing system could be obtained from research, where intercropping could play a crucial role. One of the farmers mentions enset intercropped with khat to serve a water providing purpose for the soil, which the author strongly doubt. More logical is that the water demanding enset would “steal” water from the khat.

6.3. KHAT AND FARMERS’ VULNERABILITY - CHEWING

To be in Ethiopia, church does not have such a big influence on people’s moral and ethics in the area of study as for example in Bahar Dar (Almqvist *et al*, 2005). This might be due to the “mixture” of people in tribes and religions. In addition, it is the view of the author that a khat grower is easily tempted to chew.

Socio-economy

Khat chewing can serve a good purpose in the social lives of people, for solving conflicts etc. That khat suppresses hunger and sleep can also make life easier for a poor farmer, but it does not seem to be a long-term solution.

A lot of money is spent on khat, foremost by men. The women are often the ones responsible for feeding the children and this might be a reason for them not to spend money on khat. It is most often the men who are the chewers and the author thinks it is convenient for a farmer to grow some in order to supply him self as well as the neighbours with the drug.

Health aspects

There is not much research done on how khat affects the health of the chewer and most khat chewers choose not to think of the possible effects. It is the view of the author that the most severe problem is that regular users get thin and weak due to lack of food and, to some extent, also lack of sleep. This should lower the physical status in general and make them susceptible to infectious deceases. From the interviewees it was also learned that some people use alcohol and cigarettes in connection to khat, but this is not so common in the study area, as in e.g. Bahar Dar, where people commonly drink alcohol to break the mercana to be able to sleep (Almqvist *et al,* 2005). In Wondo Genet there are more chewers who stick to only khat and have no problems sleeping after chewing.

Another serious health hazard is the chewing of pesticides that goes together with the khat. That people can be resistant to DDT is doubtful and probably people suffer from the poison without knowing the source of sickness.

Sometimes khat is connected with the spreading of HIV/Aids. From the author's point of view, the only connection is that the bars, which most often in Ethiopia serve also as brothels, sometimes have a room for khat chewing. In Ethiopia where women are often perceived as merchandise and HIV/Aids is spreading rapidly, a completely different discussion is needed for dealing with those question. Khat in itself has not much to do with it. Prostitution is often connected to any trade, not only khat. The focus should be on the attitudes towards women. The results for this study also suggest that many men think it is "the right of every man to buy sex". Some of the interviewees said that khat decreases the sexual desire and thus work as a protective measure against HIV/Aids. From the author's perspective this seems a bit far-fetched, but of course that can sometimes be the case.

When it comes to the positive effects of khat mentioned by the interviewees the results are ambiguous. Most importantly is that if people believe in that something for example is curing, the placebo effect may help them.

6.4. CATWOE

Since CATWOE was used for structuring the system (for definition of the mnemonic, see p.11) a summary of what khat makes to the livelihood system to affect farmers' vulnerability, will be presented:

Customers

Main customers are the *chewers and their families* who can be seen as both winners and losers:

+ concentration
+ increased work capacity (e.g. drivers)
+ social purpose – interaction and "peace-keeping"

- health effects
- socio-economic effect on individual, family and society level

Also *farmers* can be seen as customers, both as beneficiaries in terms of improved livelihoods from selling of khat, but also as chewers with the advantages and drawbacks it brings.

The khat cultivation creates work opportunities and also the *employees* can be considered as customers in the system.

Actors

Actors in the system are foremost the *farmers* who are "driving the system". Others who are acting in the system are; *customers* who create the market for selling of the khat, the *government* which make decisions on regulations, taxes etc and the *traders* who make the system move. All participants can be seen as actors, such as the *church* (influence people's chewing to some extent) and also *local authorities* who, to some extent, are able to influence the thinking of people in this issue.

Transformation

The transformation is the growing of khat which changes inputs into outputs.

Inputs:
- work – local.
- sticklings – from neighbours when establishing khat farm, then from own stems.
- fertilizers – manure from own farm or buying from nearby.
- pesticides – from nearby village or town.
- water – from irrigation system if accessible.

Outputs:
- khat for local market or transport to Addis, Nasret etc
(+ chewing, trading etc)

World View

Reason for restrictions:

Religious pressure; khat chewing is a sin or at least not encouraged.
International pressure; "khat is a drug".

Owners

The government can be seen as the main owner of the system because it has the power to stop it through laws and regulations (at least to some extent).

Also the farmers can be seen as owners, because they are the ones who make the decision to grow khat.

Environment

Reasons for cultivation:

+ Ethiopia depends on export, (3:rd or 4:th biggest export item), both farmers and the country (government)
+ Large amount of taxes collected from trade.

Why increased market?

Increased chewing because of unemployment, secularisation and "modernisation". Also emancipation – more accepted for women to chew khat.

Negative effects of increase:

Food security threatened (in some parts, e.g. in Harar vegetables are now expensive because of low availability).

Health problems and social problems that affect society and the country.

6.5. DOIT-AR

Since the DOIT-AR project has run over several years, it was difficult to gain a full picture during the course of the four months study. But I got a fairly good insight in the project by listening to and taking part in the ever on-going discussion within the college. My conclusions were that there is a wide range how people understand the participatory approach to research, which is one of the bases of the DOIT-AR. Another point is that the line between participatory action research and pure development aid is difficult to draw and to clarify the research part of action research. There still seems to be a wide-spread opinion about farmers as "not knowing their own best".

One of the main ideas with the DOIT-AR, that interdisciplinary research requires team-work and sharing of ideas, I consider as difficult in the areas I have seen of Ethiopia. I experienced a competitive environment within the university where people seem to think they would loose something by sharing their research work with others. This might also be true in a place where so much of your life standard is at risk if you loose your position, but it is creating hindrances for collaboration and interdisciplinarity.

For me coming to Wondo Genet to do my research just for a few months, it was great to be connected to the project. I arrived in a context where it was already verified why the research should be done and I had people to ask for help and to discuss with. I also had a fortune in joining one of the groups, who already had organized people in the study area and made them agree to participate. They had also built good relations with them, so I

could start from there and did not have much trouble finding the three farmers for my study.

A disadvantage could be that during the first weeks I had to ”check the grounds” for the level of cooperation with the group. Before going there I expected a closer collaboration than it turned out to be. No ground was set and as mentioned before, they were busy with other things so a discussion on our team-work seemed to be out of place. To me it seemed that they worked with the project when they got some spare time and that they could not plan the work like I’m used to, maybe because I come from “the west”. After three weeks I decided to do the study rather independently from the group, but I still went to discuss with them every now and then.

I also encountered a different ”culture of cooperation” without any detailed introduction to the project and information on the study area and research settings. Ethiopian researchers seem to be able to work without “controlling the situation”. Anyway, this resulted in me hunting my team with thousands of questions about things that, in Sweden, a new researcher coming in probably would learn in a first meeting with other team-members. Another difficulty was the language barriers. Often people did not seem to be aware of when they spoke Amharic and automatically leaving me out of the discussion.

6.6. DIFFICULTIES

Farmers

During the farm-visits the aim was to try to be somewhat at the same level as the farmers and not to disturb them in their daily life. This showed to be difficult, though. Even if the farmers were visited a considerable number of times, it was always a big event when the author, as a white, rich person arrived and there were many coffee ceremonies and food invitations.

The ambition was to ask open questions and try to let the farmer lead the discussion as much as possible, but it is important to be aware of that it is impossible for the interviewer to be completely neutral in the interview situation.

It is also important to bear in mind that in Ethiopia truth is seen differently from a Swedish or a ”western” context. Cross-checking sometimes created more confusion and I got different information at different times of questioning, which shows that there are no existing ”truths” and that it also might not be of a big importance. There is also a fear of authorities and especially the governmental employees are very restricted in what they can say without loosing their position or employment security. In addition, the lack of a functioning democracy and probably a lot of corruption make it difficult to understand how the legal system really works.

The goal to address the women as much as the men was not achieved. In Ethiopia the man is the head of the family and the word of a woman is not as important as that of a man. Some men are reluctant to let their wives talk to strangers. For the families it is natural to let the man talk, and the balance between having an open approach and to

include women in the study was difficult. In addition it is the man who is responsible for the fields and who is the one knowing about khat cultivation.

The multi-lingual character of the kebele meant that sometimes there was a three-way translation during the interviews. This might have led to incorrect translation and misunderstandings.

General

I am happy I planned my stay in Wondo Genet to more than the usual time for field work for a master thesis. If I counted the "wasted" (with wasted I mean when I could not influence the proceedings of my work) time in hours, I would probably find that I spent totally two full-time weeks of work waiting for cars going to town, for people to show up for meetings, for the farmers coming back from the field or from the market and on a lot of organizing. Efficiency is really a different thing in different parts of the world…

The turbulent political situation in Ethiopia, with a peak in the beginning of my stay, also influenced my work. Everyone was a bit disturbed and had difficulties focusing on work.

7. CONCLUSIONS

The vulnerability of farmers' livelihoods is affected by khat cultivation in several ways and it is both increased and decreased by the extended cultivation of the green drug.

Farmers are vulnerable towards the market, which is fluctuating, both seasonally and in a longer time range. Once the khat is ready for harvest, or even more important, if already harvested, it must be sold and then the current market price terminates the income generated. This also makes farmers depend much on local traders, who are the ones in contact with traders and buyers further up in the market chain.

The prominent theft problem in the area also contributes to farmers' vulnerability. The high work-load from protecting the khat, also during the night, makes farmers tired with less energy left for other sectors of farming. The increase of thefts in the area also breaks down social ties and a weaker social safety net can increase vulnerability severely in a society where the political structure contribute little to people's sense of security.

Pesticides are generally used more on khat than on other crops and often without any specific knowledge on protective measures during spraying, which pesticides to use etc. The farmers are exposed to the poison, so is the chewer.

A farmer's vulnerability can also increase with khat consumption, where the health effects are little known, but estimated to be significant. A khat farmer might be more tempted to chew than a farmer that does not cultivate the drug.

How the high work-load affects farmer's livelihood and vulnerability is not clear, considering the high income generated from the crop. The steady income from harvesting twice or three times annually enables food security in an area where food most often is available at the market. Farmers mention a positive effect of khat on soil, which should

prevent soil from depletion and hence decrease vulnerability in comparison to a number of other crops. Vulnerability could be reduced by khat chewing, but probably only as a short-term solution. Suppression of hunger and sleep makes people weaker in the long run and regular chewers are often susceptible to deceases. Khat is also used as a medicine, where the placebo effect plays a significant role.

Again, the issue of khat is complex and it is impossible to state the overall effect on a farmer's vulnerability. It all depends on what aspect is high-lighted and how the farmers perceive the situation.

Summary of conclusions

Identified sources of vulnerability in connection to khat cultivation:

- relations with traders and market dependency
- thieves
- pesticide use
- negative effects of chewing
- work load?

Decreased vulnerability in connection to khat cultivation:

- steady income
- positive effects of khat on soil
- positive effects of chewing

8. RECOMMENDATIONS

The issue of khat is very complex and it can be looked at from many different perspectives. Both the individual farmer and Ethiopia as a country depend on khat production. The social costs are difficult to estimate, especially in a country where the national government does not take a big responsibility in terms of health of regular chewers and other social costs connected to the wide-spread consumption. Also, little is known on the physiological effect of khat, present evidence is based on people's opinions, which differ markedly. More research on health effects of khat is needed and that is what possibly could make people chew less.

The focus of this study is the farmers and the recommendations I concentrate on here is how their vulnerability in connection to khat cultivation could be reduced. First, some kind of cooperative to strengthen their position towards traders could be useful. A common ground for selling might make them stronger, so would more knowledge about qualities and trade. Other outcomes of cooperation could be enabling common action against thieves and involvement of the institutions responsible for enforcement would also be highly valuable on the matter.

When it comes to the pesticides, more information and extension programmes lead by the government, e.g. about protective measures concerning pesticides spraying, would certainly reduce their vulnerability. I see the use of pesticides as one of the biggest health risks connected to khat.

As mentioned above, if more about the health risks was known, the farmers might consume less. Further the government could take a lead in opening up the debate on khat chewing and how it affects the individual consumer and the society.

To extend the irrigation system in the area would help khat farmers steer the harvest into the price peak-times and increase the income. If the cultivation of khat continues to spread, the food security might be threatened. Here a market for other products, such as vegetables, would be a valuable development. For foreign investment for market creation might be a pre-resequite at this stage, so that the products could be sold outside Ethiopia. Even if the focus during my study has been on the farming families who in many ways benefit from the khat cultivation, I think the increased chewing in the country is a severe problem. The wide spread use of the drug affects people and society in different negative ways and good solutions to steer the trend into another direction, sustainable also for the farmers, would benefit Ethiopia and its people in the long run.

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2. Kombolcha, 051122
3. Chofere, 051117
4. Yudo, 051129

Farmers' DOIT-AR coordinator, 051117

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Appendices

Objectives of DOIT-AR

Appendix 1

The overall development objective of the DOIT-AR project is to:

"Contribute to poverty alleviation through participatory natural resources interventions, increase profitability and efficiency of forestry related or dependent enterprises, and achieve ecologically, socially and economically sustainable use and conservation of natural resources, with natural resources having a starting point in forest, trees, bushes and shrubs with their component wild life. The contribution will be through education, research, limited development activities, communication, and consultancies."

The specific objectives are divided into three main areas:

1. Field research and field based learning – Generation of knowledge
2. Institutional capacity building and human resource development – Making use of knowledge
3. Management objectives – Enabling generation and use of knowledge

DOIT-AR is a new type of research in Ethiopia and during a work-shop in March 2004 the importance of cooperation with both national and international research partners was emphasized (Tsegaye, 2004). The new approach of research was described as: "A new "vision" for doing research with guiding principles and values requires a demand driven, gender balanced holistic approach. This new approach is characterised by participatory, interdisciplinary, action and development oriented learning and impact seeking process. The various disciplines working together to bring about an impact are mainly socio-economics, enterprise and markets, forestry, agriculture, environment and policy issues (Sithole, 2002)."

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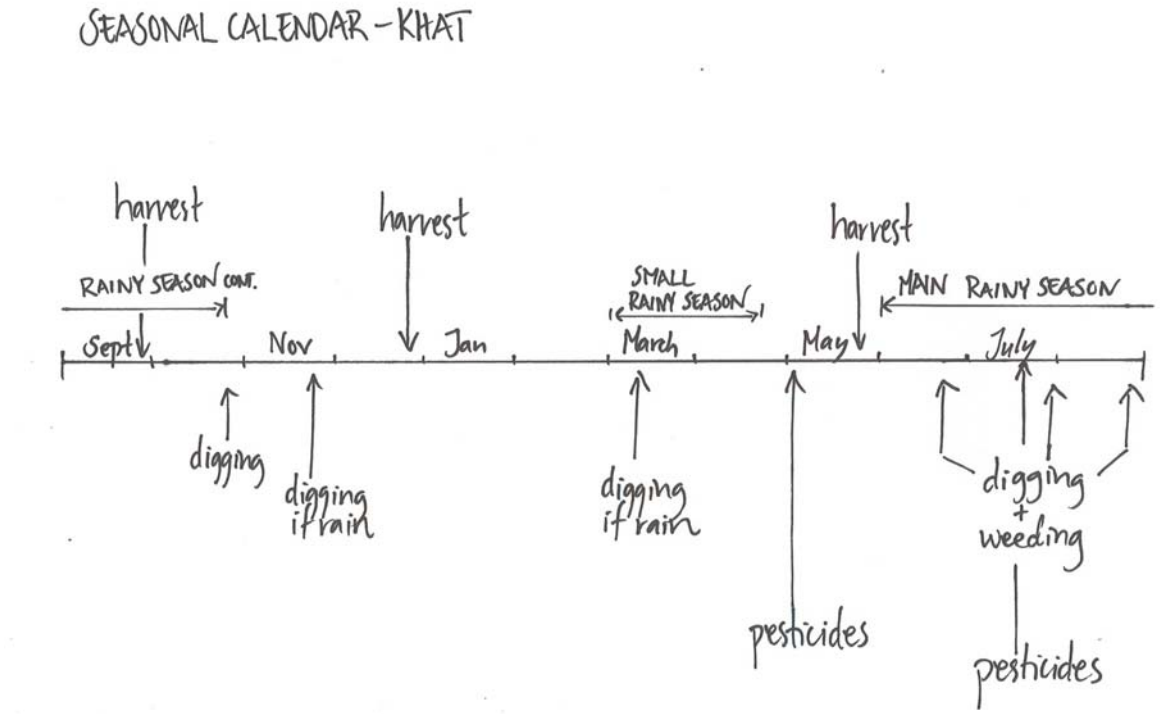
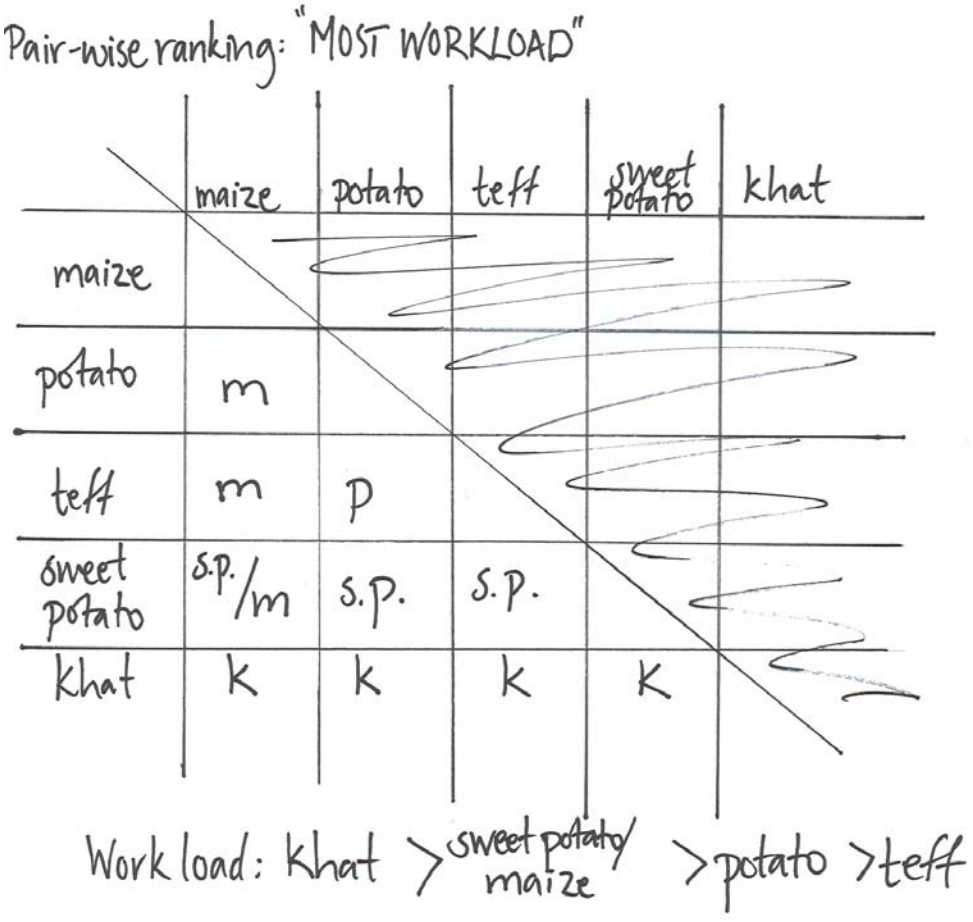
Examples of PRA-tools: Seasonal Calendar and Pair-wise ranking

Appendix 2





Appendix 3

LEGEND

- Zonal boundary
- Wereda boundary
- PA boundary
- Lake
- Town

Road

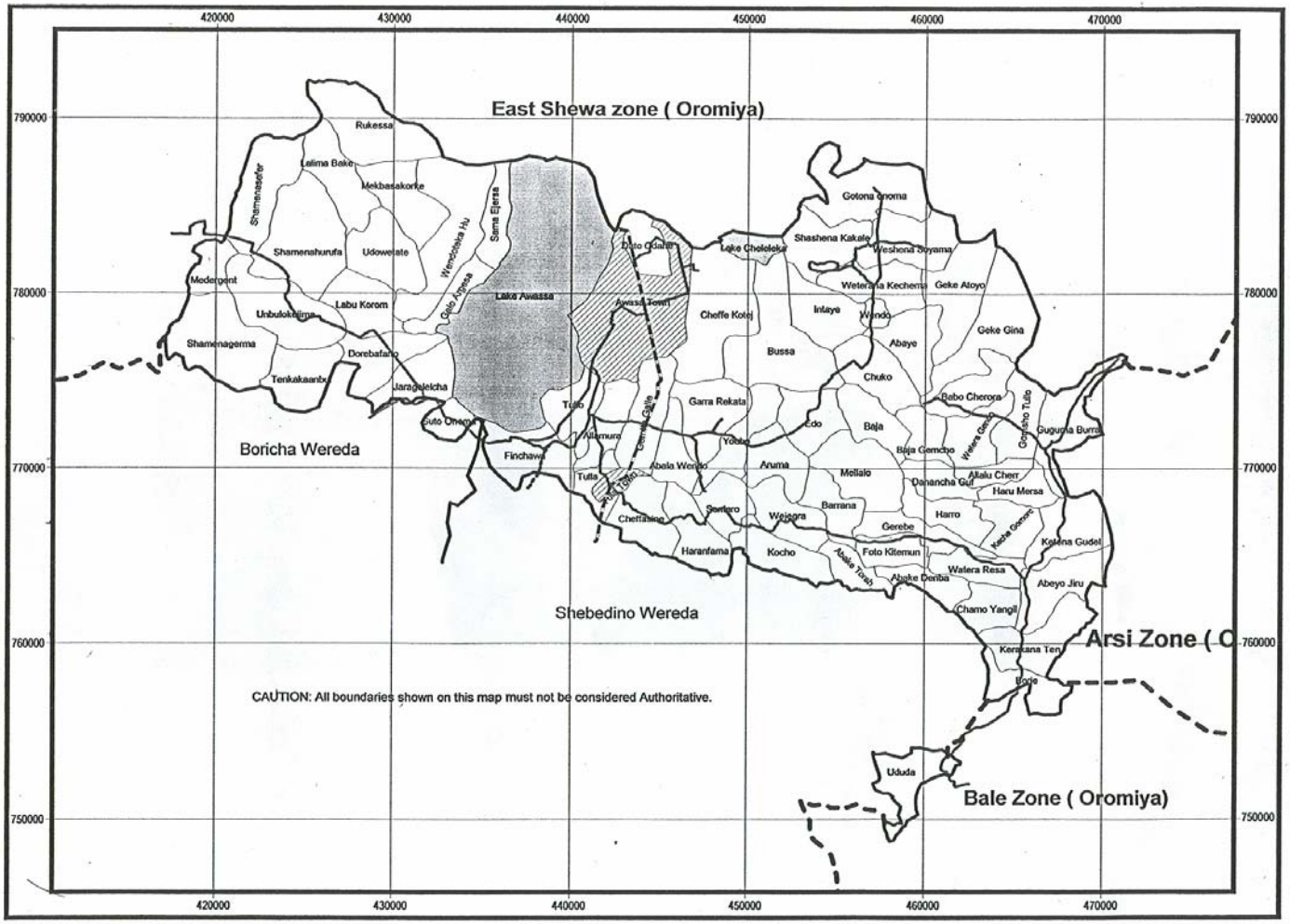
- Asphalt
- Gravel
- Earth Track
- Earth

Scale;1: 250,000

2.5 0 2.5 Kilometers

Prepared and printed by BoSP;
GIS and Cartography Deparment , 2004

LOCATIONAL MAP OF AWASSA ZURIA WEREDA



Source; Sidama Zone Planninig and Economic Development Department

Malathion and DDT

Appendix 4

Malathion

The insecticide Malathion belongs to the group of organophosphorus pesticides. According to the WHO classification Malathion is slightly hazardous to human beings, moderately toxic to birds and small mammals, toxic to bees and very toxic to fish and aquatic invertebrates. There is no evidence of cancinogenicity for the compound but it is a possible mutagen. Malathion is not a persistent compound in the environment, it will decompose fast under tropical conditions. The pre-harvest interval is 21 days, no food should be collected from the treated area the first 21 days after spraying. When spraying protective clothing and facemask should be worn (ATTP Share Company,1996).

DDT

DDT (***d****ichloro-****d****iphenyl-****t****richloroethane)* was developed as the first of the modern insecticides early in World War II. It was initially used with great effect to combat mosquitoes spreading malaria, typhus, and other insect-borne human diseases among both military and civilian populations.

In 1962, the American biologist Rachel Carson published the book *Silent Spring*, which alleged that DDT caused cancer and harmed bird reproduction by thinning egg shells. The book resulted in a large public outcry which eventually led to the insecticide being banned for agricultural use in the USA, and was one of the signature events in the birth of the environmental movement. DDT was subsequently banned for agricultural use in many countries in the 1970s due to what many believe is a negative environmental impact. There is still a great controversy regarding the extent of this impact and the reduced use of DDT to fight human diseases.

As of 2006, DDT continues to be used in other (primarily tropical) countries where mosquito-borne malaria and typhus are serious health problems.

Overall, DDT concentrates in biological systems (particularly in body fat), it is a toxin across a certain range of phyla, and it bioaccumulates up the food chain, reaching its greatest concentrations in higher animals such as humans. DDT is a persistent organic pollutant and is highly persistent in the environment. It has a reported half life of between 2-15 years and is immobile in most soils. Its half life is 56 days in lake water and approximately 28 days in river water. Routes of loss and degradation include runoff, volatilization, photolysis and biodegradation (aerobic and anaerobic). These processes generally occur slowly. Breakdown products in the soil environment are DDE (1,1-dichloro-2,2-bis(p-dichlorodiphenyl)ethylene) and DDD (1,1-dichloro-2,2-bis(p-chlorophenyl)ethane), which are also highly persistent and have similar chemical and physical properties (Wikipedia, 2006).

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Final discussion with farmers (Feb 2-10, 2006) Appendix 5

1. Who influences you in your decisions about your farming? (*Venn-diagram)*

2. Is there any difference in wealth; khat growers/non-khat growers?

3. Do you feel more secure with khat than you would do without?

4. Local word for wealth?
poverty?
vulnerability?

5. How far in the future do you plan the farming?

6. Do you see any solution to the problem of thieves? How does this influence your work-load?

7. Religion – has there been any change in importance during the years?

8. The relation with traders – do you have any wish for change/improvement?

9. Pesticides – advice on Malatine, DDT etc

10. What effect does khat have on soil? Has there been any change in soil fertility in last years?

11. Do you see any possibilites of intercropping with khat? (e.g. cereals, maize)

12. *Time-line;* What has changed in the last 15 years? –important events; conditions for farming etc

13. Market-dependency – do you see any danger in that?

14. What is your perception on future in connection to khat:
- personal?
- regional?

15. Do you have any wishes for changes in general in connection to khat?

16. How could vulnerability be reduced:
- relations with traders?
- pesticide use?
- chewing?
- work-load?

17. Anonymity (explanation about thesis)