Marketing Mangos

Strategic Advice for the World Agroforestry Centre Based on a Perceived Quality Study in The Netherlands and Kenya

Master thesis

Tim Boersma

University of Twente / The Netherlands

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Graduation Committee:

Dr. M. Galetzka	(University of Twente)
Dr. Ir. S.J. de Boer	(University of Twente)
Dr. B. Jama	(World Agroforestry Centre)

Address:
University of Twente
Postbus 217
7500 AE Enschede
The Netherlands

Address:
World Agroforestry Centre (ICRAF)
United Nations Avenue, Gigiri
P.O. Box 30677 – 00100
Nairobi, Kenya

EXECUTIVE SUMMARY

This research was carried out for the World Agroforestry Centre (ICRAF) to determine the factors that influence consumers buying behaviour in the field of mangos in both the Netherlands and in Kenya and to develop a strategy for ICRAF to further develop the products and the markets in order to help local farmers to become more competitive in the (inter)national market for mangos and reduce poverty by doing so.

In both countries people were interviewed based on a questionnaire. This survey was based on the model of Perceived Quality, providing detailed information about consumers' preferences and demands. In the Netherlands 1000 people were randomly selected and received a questionnaire by post. Of these respondents, 160 sent back their item. In Kenya 280 people from four different regions (Coastal Area, North-Eastern Kenya, Nairobi and Nyanza & Western Highlands) were interviewed with the help of translators. The surveys were minimally adopted due to differences in expected knowledge about the product.

The data showed that in the Netherlands the amount of consumed mangos is quite low, which was expected. From the surveys however no obvious reasons for this low figure appeared. In fact, most respondents were in general positive about the fruit, although not eating it very often. It was concluded that mangos might not be as common in the Netherlands as for instance a tropical fruit like banana is. In any case these results provide interesting starting points for further research.

In addition to the seemingly low interest of Dutch consumers in mangos the research suggested many obstacles in case of exporting the fruit from Kenya to the European Union. Most important are the high quality standards of the European Union, the perishability of the mangos and the poor logistic conditions in Kenya. These difficulties have already resulted in the change of the export focus from the European Union towards Arabian countries.

Furthermore the results of the research in Kenya show promising and challenging features for possible markets and future research. It is argued that the focus of local small-scale farmers should not be on export to the European Union, but should mainly be on local markets. First of all a significant share of the population in North-Eastern Kenya does not eat mangos because of mythical beliefs. Secondly, the data indicate that some consumers are likely to prefer other varieties of mangos than the few popular ones that are grown nowadays. Finally, not enough farmers are cooperating and as a result not optimally exploiting their own possibilities, which makes them even more vulnerable in this highly competitive market.

It is suggested that ICRAF should continue to conduct studies like these in order to have a more complete framework to help small-scale farmers to become more competitive. Although consumer research is not a panacea, it should be an integral part of the strategic efforts of ICRAF.

PREFACE

When telling people that showed interest in my final thesis about the subject of my research, usually a vague smile formed around that person's mouth. Quite understandably, since one does not hear of this type of research every day. In addition one could wonder: "What on earth are you going to do with that?" I am sure this would happen to me as well if someone else had done the assignment, and I can recall my vague smile when first hearing of the assignment through dr. Sirp de Boer.

Over six months later I can look back and recognise once again that I regret that it has finished already. On the other hand, looking back brings back that vague smile again as well. In this instance though, not because of simply not knowing what lies in the future, but exactly the opposite: knowing what was in that particular future that became today's past and being grateful to have been part of it.

Of all the people that deserve a confirmation of my gratitude I shall mention few. I would like to thank both my lecturers from the Netherlands, dr. Galetzka and dr.ir. De Boer, for all their critical comments on the work as it was performed and on the documentation that was sent to them over and over again. From Kenya I should thank dr. Bashir Jama for supervising the project, Abdi Zeila, Elisha Ouma and Simitu Parnwell for helping me out during the field work and organising relevant meetings. Furthermore I should mention Selina Sonon and Abdallah Kassim for listening to my probably endless questions and providing me with useful answers. Last but certainly not least from Kenya I should thank Walter van Opzeeland for helping me out with too many things to mention, so in short for being a great friend. To finalise my respects I should refer to my parents, who have been waiting for this occasion too long but fortunately shall still be happy once this work has been honoured with a diploma.

I hope after reading this thesis one can arguably answer the question as sketched in the first lines of this preface and above all that you will enjoy reading it.

Tim Boersma

Enschede, February 2006

CONTENTS

1. INTRODUCTION

1.1 Background and objectives

The World Agroforestry Centre (ICRAF) functions as the principal of this graduation assignment. Among other things ICRAF is helping farmers to develop a market for indigenous fruit trees. ICRAF builds on indigenous knowledge concerning the characteristics of the fruits mostly collected and sold by women on the roadside and in domestic markets.

ICRAF has identified mango as a promising fruit for further development that may include export. Mango was first introduced from India into Eastern Somalia as early 1331 but serious production and export from Africa only began during the last 20-25 years, when fibreless varieties were introduced. Today the global trade in mango reaches over 26 million tons per year and is growing. It is grown in 85 countries with India as its major producer (*Food and Agriculture Organisation of the United Nations, FAO, 2005*).

In recent years, mangos have become well established as fresh fruit and processed products in the global market. World demand is increasing especially in countries with a more temperate climate, where mangos are gaining in popularity. The increase in non-traditional mango-producing countries has been notable including West Africa, South America, Australia and Mexico.

The main trades in mango are in the form of fresh fruit, canned or as pulp, all of which are growing in demand. Of the fresh fruits 85% is supplied from Asia, while Mexico leads in canned mangos (50%). The most persistent problem is damage caused by insects and diseases.

In East Africa, Kenya is one of the leading mango producers with about 180,000 tons in 2003 (*Horticultural Crop Development Authority, HCDA, 2005*). However, the bulk of the mangos, primarily of old fibrous cultivars, are wasted rather than harvested because of the lack of processing facilities. In addition, the quality of fresh mangos is so poor that Kenya is not competitive in the international market. Furthermore the contemporary poverty in the agricultural sector in Kenya is attributed to low returns on the produce and poor marketing.

Kenya's primary fresh exports to international markets include fruits, vegetables and cut flowers. Kenya's main market is the European Union with the United Kingdom en the Netherlands as main destinations (*Omosa, 2001*). Nevertheless, the agricultural sector harbours the majority of the poor, even though it has been proved that in particular export horticulture has a poverty-reducing effect (*Humphrey, McCulloch & Ota, 2004*). In the particular field of mangos the main market of Kenyan export has changed in the past years from Europe to Arabia, where countries like Saudi Arabia and the United Arab Emirates purchase about 85% of Kenya's exported mangos, although it is still a very small percentage of the amount of mangos that is produced (*HCDA, 2005*). One of the main reasons for this change is the higher quality standard the European Union uses (*Kenya Plant Health Inspectorate Services, KEPHIS, 2005*).

This brings us to the following objective of the research:

> *The objective for this research is to determine the factors that influence consumers buying behaviour in both the Netherlands and in Kenya and to develop a strategy for ICRAF to further develop the products and the markets in order to help local farmers to become more competitive in the (inter)national market for mangos and reduce poverty by doing so.*

1.2 Kenya

The first of many human footprints to be stamped on Kenyan soil were left way back in 2000 BC by nomadic Cushitic tribes from Ethiopia. A second group followed around 1000 BC and occupied much of central Kenya. The rest of the ancestors of the country's medley of tribes arrived from all over the continent between 500 BC and AD 500. As tribes migrated throughout the interior, Muslims from the Arabian Peninsula and Shirazis from Persia (now Iran) settled along the East African coast from the 8th century AD onwards (*Lonely Planet, 2003*). Currently there are more than 40 different ethnic group in Kenya. The main groups of tribes are the Bantu who migrated from western Africa, the Nilotic people who originated from Sudan and the Hamitic group, who were mainly pastoral tribes from Ethiopia and Somalia. The main tribes are Kikuyu (21%), Meru (5%), Kalenjin, Luyha, Luo (14%), Kisii, Kamba, Swahili, Masai and Turkana. These tribes form the people of Kenya, consisting of more than 34 million people in 2005, with an average growth rate of 2,6%. Approximately 11,4 million of these people form the Kenyan labour force, of which 65-70% are involved in agricultural activities. By 2010 however, the number of Kenyans involved in rural activities will have decreased due to a predicted increase of people moving to urban areas (*FAO, 2004*).

From 1885, Kenya was occupied by Germans, Portuguese and the English. Founding president and liberation struggle icon Jomo Kenyatta led Kenya from independence in 1963 until his death in 1978, when President Daniel Toroitich Arap Moi took power in a constitutional succession. The country was a de facto one-party state from 1969 until 1982 when the ruling Kenya African National Union (KANU) made itself the sole legal party in Kenya. Moi acceded to internal and external pressure for political liberalisation in late 1991. The ethnically fractured opposition failed to dislodge KANU from power in elections in 1992 and 1997, which were marred by violence and fraud, but are viewed as having generally reflected the will of the Kenyan people. President Moi stepped down in December of 2002 following fair and peaceful elections. Mwai Kibaki, running as the candidate of the multiethnic, united opposition group, the National Rainbow Coalition, defeated KANU candidate Uhuru Kenyatta and assumed the presidency following a campaign centred on an anticorruption platform. In a corruption survey dated 2004 however, Kenyans indicated in a survey that one in three people said that they or members of their households had paid bribes in the last twelve months (*International Transparency*).

Kenya is located in Eastern Africa, bordering the Indian Ocean, between Somalia and Tanzania. The climate varies from tropical along the coast to arid in the inland country. The determined land use seems remarkable: 8.1% is arable land and only 1% holds permanent

crops. The rest is used for other purposes that are not specified, but are likely to be deserts, national parks or used for temporal arable use (*CIA Fact Book, 2001*).

In economic terms, Kenya's development has been hampered by corruption and by reliance upon several primary goods whose prices have remained low. In 1997, the International Monetary Fund (IMF) suspended Kenya's Enhanced Structural Adjustment Program due to the government's failure to maintain reforms and to curb corruption. A severe drought from 1999 to 2000 compounded Kenya's problems, causing water and energy rationing and reducing agricultural output. As a result, GDP contracted by 0.2% in 2000. The IMF, which had resumed loans in 2000 to help Kenya through the drought, again halted lending in 2001 when the government failed to institute several anticorruption measures. Despite the return of strong rains in 2001, weak commodity prices, endemic corruption, and low investment limited Kenya's economic growth to 1.2%. Growth lagged at 1.1% in 2002 because of erratic rains, low investor confidence, meager donor support, and political infighting up to the elections. In the key 27 December 2002 elections, Daniel Arap Moi's 24-year-old reign ended, and a new opposition government took on the huge economic problems facing the nation. In 2003, progress was made in rooting out corruption and encouraging donor support, with GDP growth edging up to 1.7%. GDP grew a moderate 2.2% in 2004.

In conclusion, Kenya is one of the African countries facing important years to come. With an economy slightly growing since 2003, still many issues remain worrisome. Government has so far not reduced the omnipresent corruption for instance. Another possible problem seems the ethnic unrest in the remote northern part of the country, where government does not seem to have the power to control the region. With about 70% of the labour force being involved in agricultural activities with very low profitability, poverty is still wide spread and more people find their way to the urban areas in search of a better future.

1.3 World Agroforestry Centre (ICRAF)

The International Council for Research in Agroforestry (ICRAF) was created in response to a visionary study in the mid-1970s led by forester John Bene of Canada's International Development Research Centre (IDRC). The study coined the term 'agroforestry' and called for global recognition of the key role trees play on farms. This led to the establishment of ICRAF in 1978 to promote agroforestry research in developing countries.

During the 1980s ICRAF operated as an information council focused on Africa. It joined the Consultative Group on International Agricultural Research (CGIAR) in 1991 to conduct strategic research on agroforestry at a global scale, changing its name from Council to Centre. After joining the CGIAR, the Centre explicitly linked its work to the goals of the CGIAR—reducing poverty, increasing food security and improving the environment—through two means: overcoming land depletion in smallholder farms of sub humid and semi-arid Africa, and searching for alternatives to slash-and-burn agriculture at the margins of the humid tropical forests. In implementing this strategy, the Centre expanded into Latin America and Southeast Asia while strengthening its activities in Africa.

ICRAF continued the process of institutional transformation by developing a science culture, building excellent research facilities and doubling its financial and human resources by 1996. The Centre formally adopted an integrated natural resource management framework for all of its work, and institutionalized its commitment to impact by creating a Development Group dedicated to moving research results onto farmers' fields.

In 2002 the Centre changed its name from the International Centre for Research in Agroforestry to the World Agroforestry Centre**.** The new name reflects the fact that the Centre is now recognized as the international leader in agroforestry research and development. Realistically, however, the Centre cannot possibly provide expertise on all conceivable dimensions of agroforestry. There are advantages to specialisation, which is why the Centre engages in strategic alliances with a range of other institutions.

In conclusion, ICRAF is leading in agroforestry research and development. In order to be of most help for the rural poor in the countries the organisation operates in, it seems logic to combine several fields of study.

1.4 Problem formulation

The following aspects are considered in order to come to a well defined problem formulation:

- The objective of the study can be categorised as a strategic objective since multiple facets of the market for mangos need to be analysed. Most importantly the factors that influence consumers buying behaviour in both the Netherlands and in Kenya need to be investigated. In order to achieve this, this study aims at identifying how consumers in both the Netherlands and in Kenya perceive quality in the market for mangos. Secondly an analysis of the producers of the mangos is required. Finally attractive opportunities need to be filtered from the results and an action plan with practical recommendations has to be written for ICRAF.

- Given the fact that the market for mangos in particular and horticultural products in general has been changing rapidly and sometimes drastically over the past two decades, it is very difficult to typify a time horizon for the attractive opportunities which will be selected. Consumers buying behaviour might change over time or the Dutch and/or Kenyan market might prove to be not suitable to reach the objective of this assignment. Furthermore quality standards for products are very high in particularly the European Union, which often makes it more complicated for companies from developing countries to sell their products (*Singh, 2002*). Despite those facts the European Union absorbed about 85% of Africa's agricultural exports in 1995. Therefore it is not likely to expect any changes as a result of the selected attractive opportunities within short notice. Therefore a time horizon from two to five years has been selected.

Based on the above statements, the problem formulation is defined as follows:

How do consumers in both the Netherlands and Kenya perceive quality in the mango market and what strategy is appropriate for ICRAF to make local farmers and their products more competitive?

The output of this research is an overview of the characteristics of mango markets in the Netherlands and in Kenya including an overview of opportunities and threats. This can be of use for ICRAF in order to help out local farmers make strategic decisions in the nearby future and help them to become more competitive in the market for mangos.

1.5 Research questions

The basic logic of the breakdown into research questions is a strategy formulation since the problem formulation specifies a strategic view. Because this research project should be founded scientifically, the first issue to be solved is to collect models and theories which will have a significant contribution in reaching the objective of this assignment. Therefore the first research question is:

1) Which models and theories are useful in order to determine the factors that influence consumer's buying behaviour in the field of mangos in both the Netherlands and in Kenya?

The Dutch market has been identified as one of the two markets to be analysed in this assignment. From a commercial point of view this is interesting because in 2002 the Netherlands were the largest importer of mangos in the European Union with 72.000 tonnes in total (*FAO*), although is has to be mentioned that more than half of these mangos are re-exported to other countries within the EU (*Jedele, Hau & Von Oppen, 2003*). In order to select attractive opportunities it is very useful to use a consumer oriented approach instead of a supply oriented approach. Surely it is important to deliver quality products in time at the right place, but without knowledge about the intended consumers of your product you might select the wrong place for your product. Of course next to consumer behaviour the other existing links in the Dutch market for mangos need to be analysed as well. If possible these data will be collected from earlier research and this study will focus on the perceived quality by consumers. The next research questions are:

2) What is the current situation on the Dutch market for mangos?
   a) How do consumers perceive the quality of the market for mangos in the Netherlands?
   b) Which actors are involved in the Dutch market for mangos, what is their role and how can their influence be typified?

Kenya is the leading mango producing country in Africa. Still, many mangos do not make it to the customer, due to various reasons, such as perishability, bad quality or more practical reasons such as poor roads and inefficient ports (*Mungai, Ouko & Heiden, 2000*). The huge amount of fruits that perishes could be decreased drastically when products would be processed. So far, these products are only used for export and the Kenyan consumer does not seem interested, even when prices go up significantly outside the season. Therefore the following research questions were formulated:

3) What is the current situation on the Kenyan market for mangos?
   a) How do consumers perceive the quality of the market for mangos in the Kenya?
   b) Which actors are involved in the Kenyan market for mangos, what is their role and how can their influence be typified?

As mentioned before in this study the consumer oriented approach is used instead of the supply-oriented approach. However, a useful strategy can not be formulated without funded knowledge of the supply side of the market. Fortunately, it seems sufficient research has been conducted in this area (*Dijkstra, 1996; Mungai, Ouko & Heiden, 2000; Omosa, 2001; Griesbach, 2003; Jedele, Hau & Von Oppen, 2003, Zeila, 2005*).

This information should be sufficient to answer the fourth research question:

4) How can the supply side of the mango market be described and what are its strengths and weaknesses?

From a business perspective a comparison between the wishes of the consumers analysed and the (im) possibilities of the production side will hopefully produce attractive opportunities which can be used by ICRAF to increase mango production and sales in the future, thereby offering local farmers the possibility to raise their incomes. Furthermore it is interesting from a scientific point of view to compare the results of the consumer behaviour in Kenya with the behaviour of Dutch consumers. Consequently, the fifth research question is:

5) Comparing the characteristics of both the demand side and the supply side of the market for mangos, which attractive opportunities can be selected?

Next to identifying attractive opportunities it is just as important for ICRAF to receive suggestions on how to use these opportunities and actually achieve the goals the organisation stands for. To make this as practical as possible it seems useful to write a strategy in this matter. Therefore the final research question is:

6) How can the selected attractive opportunities be used by ICRAF to achieve the objectives of the organisation and to achieve the objective of this particular assignment?

1.6 Research approach

To obtain the answers to the research questions, methods and analysis instruments need to be specified. The answer to the first question – Which models and theories are useful to reach the objective of this assignment? – has been found using literature from communication science courses. There are many articles available on horticulture and fruit growing and even studies were found that particularly deal with the horticultural sector in Kenya and the worldwide

market for mangos. These studies provided interesting background information and also gave insight in the research area as a whole.

The second and the third research question – What is the current situation on the Dutch and the Kenyan market for mangos? – were each split up in three questions that need to be discussed separately. First, in both cases the question was raised which factors influence consumers buying behaviour of mangos. These data have been collected using a questionnaire which was set up by using a model of perceived quality (*Steenkamp, 1989; Oude Ophuis & Van Trijp, 1995*). This model will be discussed in more detail in the next chapter of this report. The method of data collection addresses a specific research objective and the data that supply the answer to this question can therefore be labelled as primary data (*Aaker, Kumar & Day, 1995*). The reason that much emphasis in this study is put on consumer behaviour is confirmed by De Bont (*2003*), who in his studies started working with the model of Porter (*1985*) but came to the conclusion that in strategic marketing customer orientation deserves most emphasis. This will be explained in more detail in the next chapter. Second, the issue which actors are involved in the Dutch and the Kenyan market for mangos was raised. For the Kenyan situation in particular, ICRAF's information system and earlier studies will provide detailed information on the actors in the market for mangos. Since other data sources are likely to be used in order to obtain the answers to these questions, these data can be labelled as secondary data (*Aaker, Kumar & Day, 1995*). Finally theories that are relevant to this subject are discussed and considered, in order to provide answer to the question: What can one conclude from this study from a communication scientific view?

The answer to the fourth question – How can the production side of the mango market be described and what are its strengths and weaknesses? – will be found by making use of research publications of ICRAF and other relevant articles. The main advantage of again using this form of data collection is the ready availability. The research as it has been set up may prove to be rather large and therefore collecting this type of data may produce some gains in terms of time. Additionally, there seems to be no use in conducting research that has been conducted properly before, or as the Dutch tend to say, "there is no use in re-inventing the wheel".

After investigating the characteristics of both the demand side and the supply side of the market for mangos, the data need to be compared and evaluated. By doing so attractive opportunities can be selected. In addition ICRAF can use these opportunities in order to enlarge its ability to reach its organisation's objectives.

1.7 Structure of the report

The research approach as it was discussed in the last paragraph, it presented schematically in figure 1. on the next page, indicating a structure of the report. The structure makes clear that several steps need to be taken to reach the goals of the research. The cursive letters in the structure indicate the chapter in which the relevant subject is discussed. The arrow in the middle of the structure indicates the importance of evaluating the characteristics of both the demand and the supply side of the market for mangos, in order to be able to typify the so-called attractive opportunities.

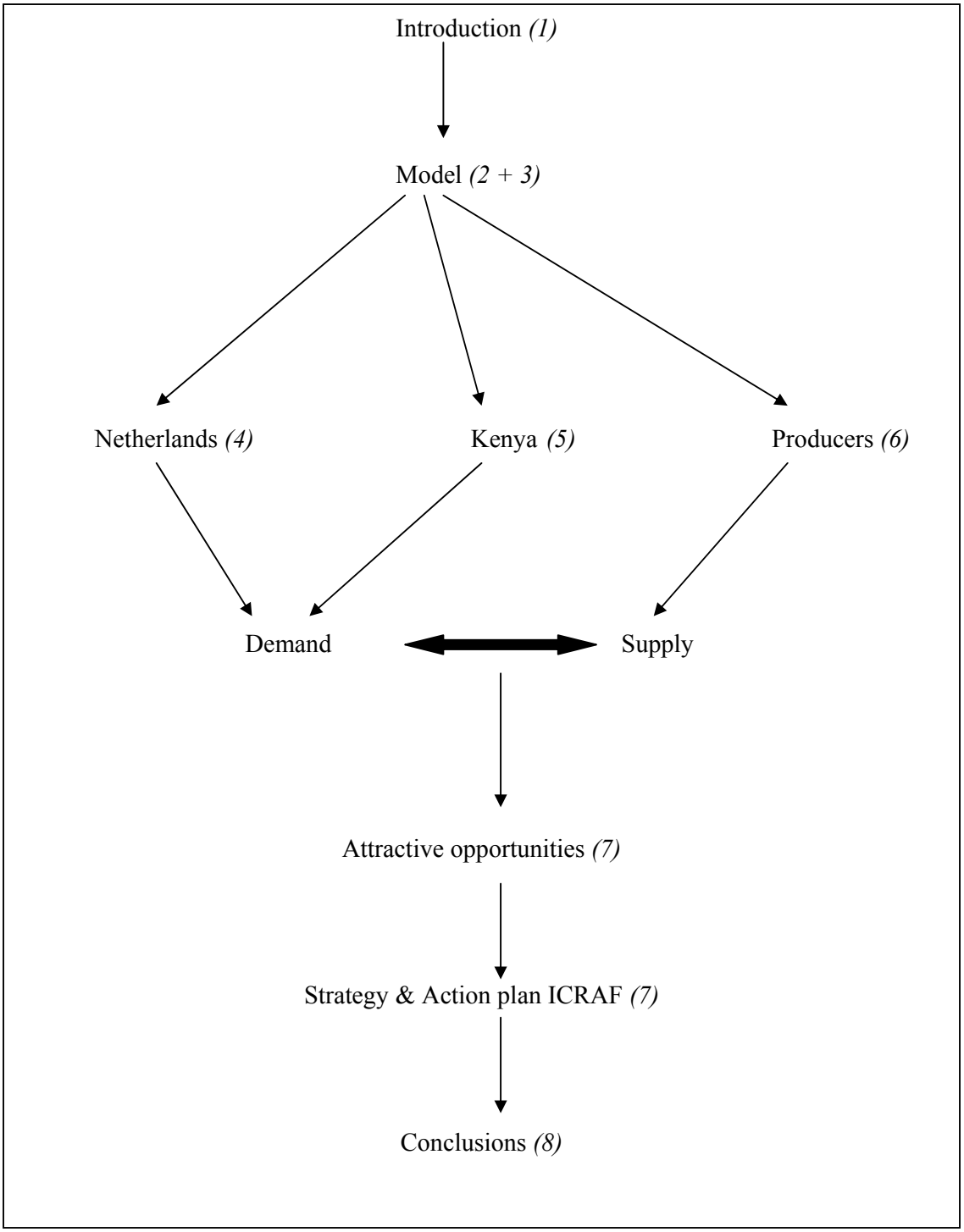


Figure 1. Structure of the report

2. MODELS & THEORIES

2.1 Introduction

In business administration many scientists use the model of five forces designed by Porter (*1985*) to approach the problem as formulated. In these studies emphasis is put on rivalry among existing firms, potential entrants, buyers, suppliers and substitutes. The quality of the model is that it provides an overall picture of the existing situation of any kind of business in terms of market partitioning, consumers, producers and in addition provides insight in possible future scenario's. The model of five forces is shown below in figure 2.

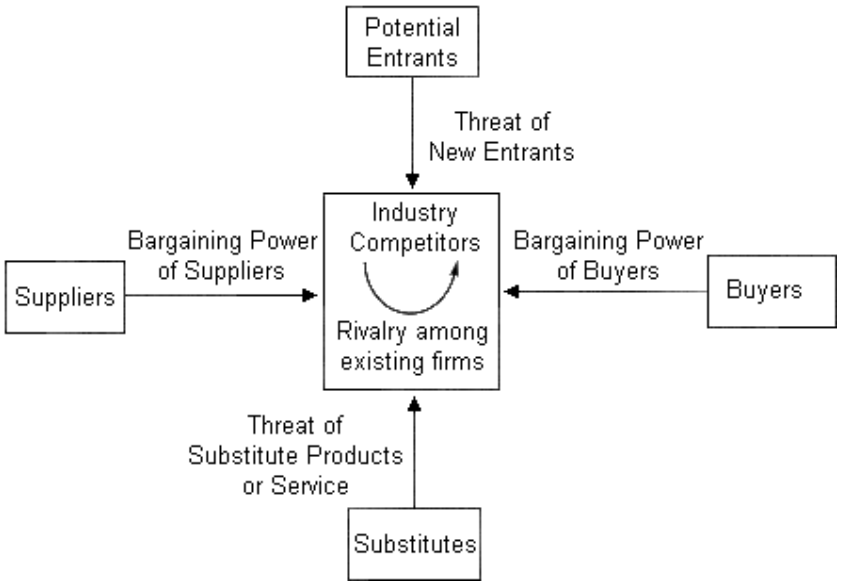


Figure 2. The model of five forces by Porter.

Because of the complete and overall picture that the model provides, it is completely logical that the model has been cherished by many scientists over the past few decades. One asset that is perhaps lacking in this particular model is the fact that the same weight seems to be allocated to all elements in this model. There are scientists who believe that in particular customer behaviour and knowledge about the intended customers is the most important asset from this model in terms of strategic marketing (*Narver & Slater, 1990; Han, Kim & Srivastava, 1998; De Bont, 2003*). In this report the model of Porter is useful to specify the field of study. Clearly most emphasis is put on the category of buyers of the product. Information about the suppliers in the market of mangos is provided through studies that ICRAF carried out recently (*Zeila, 2005*).

2.2 Perceived Quality

The studies about customer behaviour however, do not commonly deal with the horticultural sector in particular. A model that does fit the profile of both consumer orientation and a relation with food is the model of perceived quality (*Oude Ophuis & Van Trijp, 1995*). It is designed to bridge the gap between producer defined quality and consumer based quality perception (*Oude Ophuis & Van Trijp, 1995*). Measuring multiple parameters the model offers a useful framework for identification of quality parameters. The perceived quality approach considers quality dependent on the judgement of consumers of the product. To specify this quality perception of consumers this concept has been visualised in the quality quadrant, which is shown below.

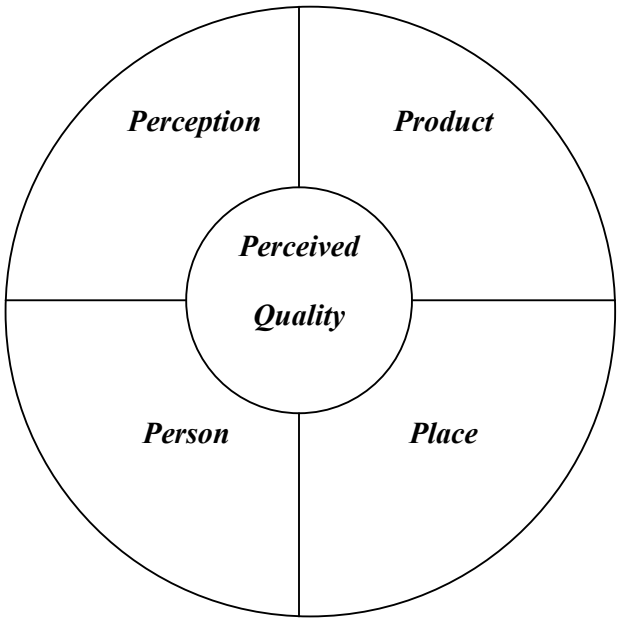


Figure 3. The quality quadrant.

The perception process in this quadrant is the result of product characteristics, experiences and believed associations with the product. The other three modalities denote the relativity and specificity of the concept of perceived quality, indicating perceived quality is one of more angles to look at this matter (*Oude Ophuis & Van Trijp, 1995*).

Quality is considered to contain several dimensions which can impossibly all be evaluated by consumers. Therefore indirect indicators of quality are used to make a judgement of perceived product quality. Steenkamp (*1989*) developed a model which makes a distinction between quality cues and quality attributes. Quality cues are defined as either intrinsic or extrinsic. These cues can be determined by consumers prior to the actual consumption of the product. Extrinsic cues are related to the product, but not physically part of it, and intrinsic cues are part of the physical product (*Steenkamp, 1989*). Quality attributes are formed by experience attributes and credence attributes. The first can be ascertained by actual experience of the product, whereas credence attributes can not be ascertained even after multiple consumption of the product.

The concept of perceived quality in general is rather abstract. The product characteristics on the contrary are concrete. This distinction is also found between quality cues (concrete product characteristics) and attributes (abstract benefits which can only be experienced by consumption). One could however argue that also cues are rather subjective, making the mentioned distinction less clear. Table 1. gives a list of quality cues and quality attributes of food.

Intrinsic Quality Cues	***Extrinsic Quality Cues***
Appearance Colour Shape Size Structure	Price Brand name Country of origin Store Nutritional information Production information
Experience Quality Attributes	***Credence Quality Attributes***
Taste Freshness Convenience	Healthfulness Naturalness Animal friendliness Wholesomeness Exclusiveness Way of production

Table 1. Quality Cues and Quality Attributes of foods.

The classification of intrinsic versus extrinsic was developed when studies (*Olsen & Jacoby, 1972*) showed that the most accurate indicators of perceived quality were intrinsic to the product, or in other words, the product attributes can not be changed without changing the physical characteristics of the product itself. Extrinsic cues on the contrary can be manipulated without actually changing the product and are therefore more interesting from a marketing perspective, such as price and brand name. These cues tend to become more important when products have a similar appearance.

The most important experience attribute when it comes to food is considered to be taste. There are studies that show an interaction between the intrinsic and extrinsic cues and the flavour of a product (*Jacoby et. al., 1971; Nevid, 1981*). Credence attributes seem to be gaining importance nowadays. These can not be experienced, not even after multiple consumption. Consumers just have to assume that a product is for instance healthy, but will never have a direct experience.

In order to bridge the gap between the quality as defined by producers and the quality through the eyes of consumers, Steenkamp & Van Trijp (*1989*) developed a Quality Guidance. It is

useful since it expresses how abstract research findings can be translated into physical product characteristics. Striking though is that the extrinsic quality cues – earlier said to be particularly important from a marketing perspective – are not mentioned in this guidance. The steps of this guidance are:

- Identification of quality judgements made by consumers in the target market.
- Disentanglement of the quality judgements into its constituents.
- Translation of the consumers perceptions with respect to intrinsic quality cues and quality attributes into physical product characteristics.

In sum, the model of perceived quality is both consumer oriented and is designed for use in food studies. The different cues and attributes as shown in table 1. are useful to get a detailed picture of consumers perceptions of the quality of a product. Furthermore the fact that these cues and attributes have been categorised makes it possible to analyse which specific cues and attributes are most important to the consumers from both the Netherlands and Kenya. Using this model will provide detailed information of consumer preferences and should therefore be a useful instrument to gain specific market information.

The categorisation of food characteristics in cues and attributes makes it possible to collect knowledge why consumers in the Netherlands and in Kenya do or do not buy mangos. These data provide interesting starting points to formulate an action plan for ICRAF in order to be able to develop the products of mango in Kenya and their markets approaches, so that local farmers can become more competitive. The intrinsic quality cues and the experience quality attributes will point out what parts about the physical product of mango consumers from the Netherlands and Kenya like or dislike. Attractive opportunities that are formulated as a result of the study could be realised by scientists of ICRAF, who specialise in product development, amongst others in the field of mangos. The extrinsic quality cues and to a lesser extent the credence quality attributes will provide attractive opportunities that should lead to a funded marketing advice.

2.3 Marketing from a cross-functional perspective

Using the attractive opportunities to the best advantage of local farmers in Kenya means using marketing theory. Wind (*2005*) published an article about current marketing approaches. He states that mental models limit managers and researchers and filter out solutions they should actually be able to see. In his opinion the human mind is adept at creating the impression of complete pictures (*Wind, 2005*). The current approach implies that people focus too much on specific working fields like for instance marketing, causing them to miss the bigger picture and often leading to failure or mismanagement. The fragmented approach of doing business does therefore not seem to be the right one.

The interdisciplinary approach of doing business and selling products provides an alternative. In particular in environments of rapid change – such as the market of mangos or that of horticultural products in general – multiple mental models are needed to be more competitive (*Wind, 2005*). According to Wind marketing can provide new opportunities for value creation and growth, as long as this is a concern of the entire organisation. The model shown in Figure

4. indicates that there are several options to realise growth. The options depend upon marketing insights into unmet needs of current customers or the needs of other market segments that could be met with the current set of products or new product offerings.

In this study all options could be useful. The questionnaire might provide insights into wishes of consumers that could be transformed into new products for the market. Also problems in terms of reaching current markets could arise. The research in both the Netherlands and Kenya might indicate potential new markets as well. Bringing new products to new markets is likely to be a more long-term goal, also considering the higher risk such an operation would imply (*Wind, 2005*).

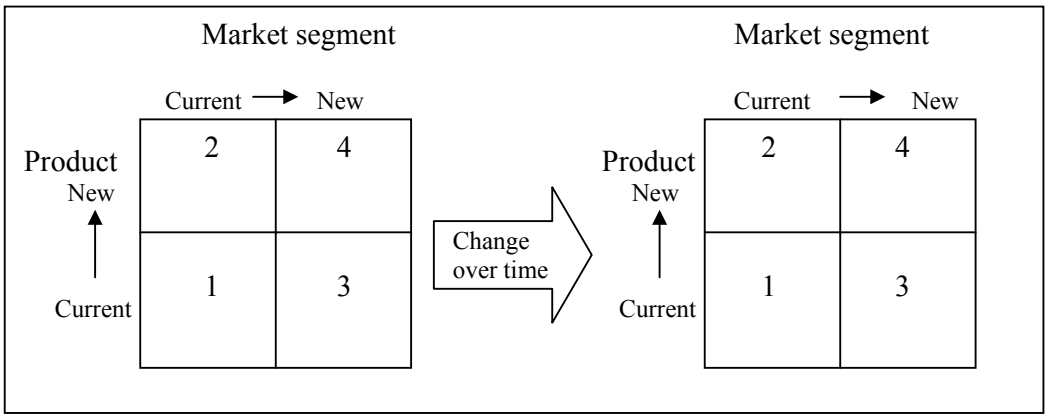


Figure 4. Patterns of growth (*Wind, 2005*).

After signalling the problems in the current thinking about marketing Wind discusses several strategies to use marketing as a generator of growth. He pleads for a market focus of strategic decisions. This is not realised solely through some persons or a department that holds responsibility for marketing activities, but the focus has to be strengthened across functional areas of the firm (*Wind, 2005*). Strategies have to be built around customer wants and needs. Many firms build markets around products. Wind argues that a market-driven company starts with customers, then develops product offerings and finally creates the infrastructures and processes to deliver, as figure 5 shows (*2005*).

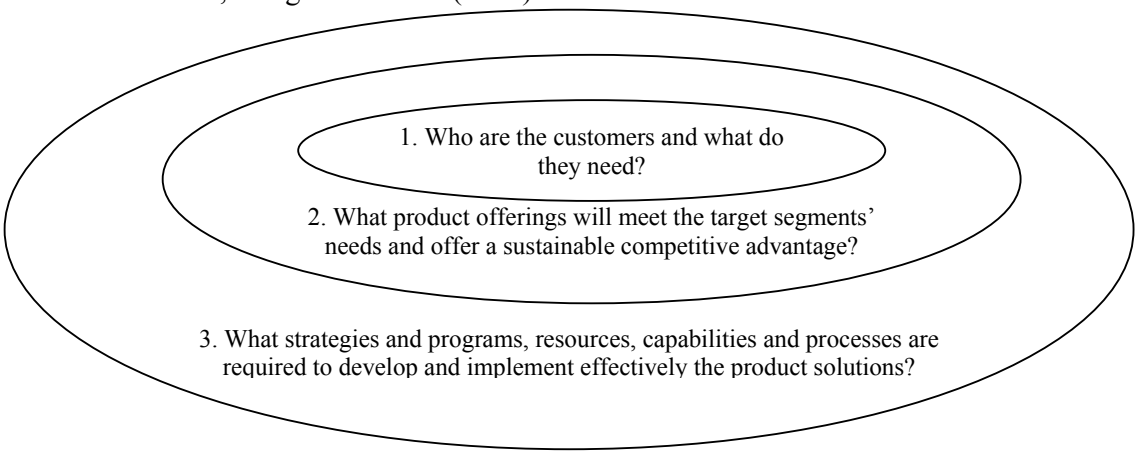


Figure 5. A marketing perspective (*Wind, 2005*).

In the field of horticultural products – and in particular when trying to improve competitiveness of local farmers in developing countries – it does not seem logic to take this marketing perspective step by step, as might be expected when considering figure 5. It is argued that for instance infrastructures and processes to deliver the products at the customers are one of the key challenges in today's marketing of mangos (*Zeila, 2005*). Since these facilities are essential in gaining competitiveness in a market for fresh produce and not the most easy to establish in countries such as Kenya, the assets mentioned in figure 5 need to be considered together instead of one at a time.

Using the model of perceived quality will provide practical indicators that could be used as attractive opportunities in terms of both product development and marketing assets. The strategic advice should not try to emphasise solely marketing issues, since this would not do justice to the complexity of the situation as a whole. Therefore it will try to discuss all the challenges that are relevant for the marketers of mangos in Kenya. All this is expressed in the conceptual model that is shown below.

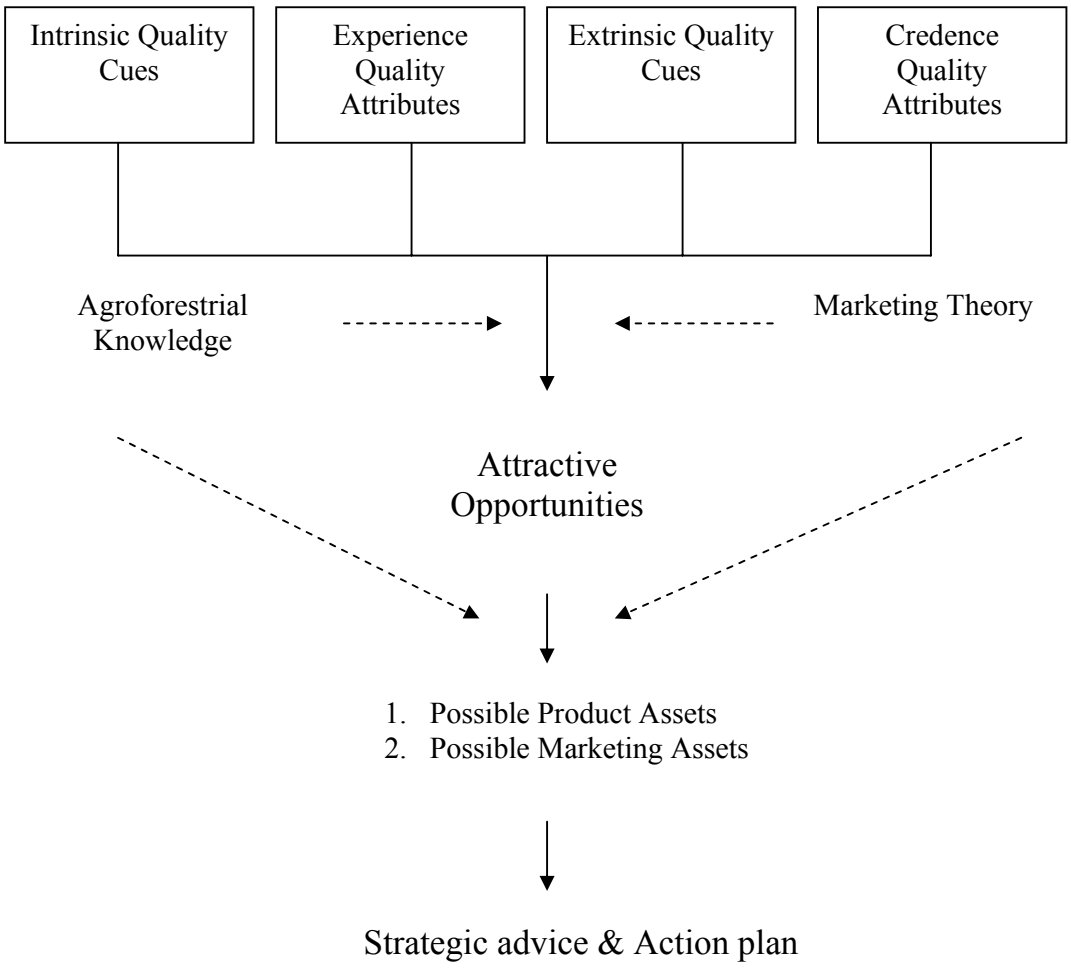


Figure 6. Conceptual model of the research

3. DATA COLLECTION METHODOLOGY

3.1 Introduction

In this study two different sets of methodology were used, mainly because of practical reasons. First experience of researchers at ICRAF suggested it would be more fruitful to use a 5-point Likert-scale in Kenya instead of a 7-point scale, which was used in the Netherlands. Secondly some questions that were used in one country were simply not relevant in the other and therefore some of the questions differ as well.

3.2 The Netherlands

In the Netherlands a questionnaire was used, partly with multiple-choice questions and with a 7-point Likert-scale. The questions consisted of general information such as age, gender and educational level, questions addressing people's motivations for buying mangos and questions based on the characteristics of the model of perceived quality. Putting down statements about mangos and asking the respondents whether and in what measure they agreed or disagreed with these statements measured the components from the model of perceived quality. Each of the cues and attributes from table 1. earlier in this paper were used when formulating the questions. Below in Table 2. some examples of attributes and cues and their related questions are shown.

Part of the questionnaire	*Example*
Part 1: Possible motivations for purchase	I seldom eat mangos, because I think they are too special.
Part 2: Intrinsic and Extrinsic Quality Cues	I would like my mango to be smaller. (Intrinsic Quality Cue "Size") I think a mango is expensive compared to other fruits. (Extrinsic Quality Cue "Price")
Part 3: Experience Quality Attributes	I think the fibres in the pulp of mangos are nasty. (Experience Quality Attribute "Convenience")
Part 4: Credence Quality Attributes	I think it is important that the people who produce mangos do this under proper working conditions. (Credence Quality Attribute "Way of production")

Table 2. Examples of questions from the questionnaire in combination with the measured component from the model of Perceived Quality (1 = totally disagree, 7 = totally agree).

To get a representative random sample of the Dutch population, a sample of 1000 households was selected from the Dutch Postal Service directory. It was decided to address 1000 people all over the Netherlands with a questionnaire, explaining the purpose of this study and the amount of time that participating would take from each of the respondents, which appeared to be between 5 and 10 minutes after several pre-tests. These tests further indicated that all the questions were understandable, so that no problems had to be expected. The questionnaire consisted of six pages that were all written in the Dutch language.

The entire questionnaire that was used in the Netherlands is shown in Appendix 1.

3.3 Kenya

The study in Kenya, which was conducted after the study in the Netherlands, had to be adjusted in several ways. First of all scientists of ICRAF expected the 7-point Likert-scale from the Dutch version of the questionnaire to be unclear to Kenyan consumers. Therefore it was adjusted to a 5-point Likert-scale, ranging from "completely disagree" through "don't know" to "completely agree".

Secondly some specific questions on mango varieties and regions where mangos are grown were added, living up to the extensive knowledge of mangos that most Kenyans were expected to have, since most of them have been confronted with the fruit since their childhood and eat mangos far more often than Dutch consumers tend to do. The changes that were made in comparison to the Dutch questionnaire are shown in Table 3 on the next page.

Finally the questionnaires were not conducted through the post, simply because there is no developed postal system comparable to the one in the Netherlands. The questionnaires therefore had to be conducted individually. In order to get a representative sample of the Kenyan population, the country was divided into several regions, namely the Coastal Area, North-Eastern Kenya, Nyanza and the Western Highlands and the urban area of Nairobi. On the basis of the population of these areas, numbers of respondents were set, resulting in an aim for this of 80 respondents from the Coastal Area, 40 respondents in North-Eastern Kenya, 60 respondents from Nyanza and the Western Highlands and 100 respondents from the area in and around Nairobi, resulting in an intended number of 280 respondents. Although the knowledge of the English language amongst the respondents was expected to be sufficient to fill in the questionnaire, it was decided that someone with knowledge of Swahili should be around during the process of data collection. It was expected that this would also reduce the chances of bias, which would have been bigger when one European researcher would have conducted the questionnaires.

The entire questionnaire that was used in Kenya is shown in Appendix 2.

Difference with Dutch questionnaire	*Motivation*
The question "From what region are you?" was removed from the Kenyan questionnaire.	Since certain areas in Kenya were visited (see paragraph below) it did not seem useful to ask people where they were from. This information was collected without asking.
The questions "Which mangos do you like best?" (region) and "Which variety of mangos do you like best?" were added to the Kenyan questionnaire.	Since it was expected that Kenyan consumers have extensive knowledge of mangos, it seemed useful to use this widespread knowledge and ask more specific questions on favourite region and most beloved variety of mangos.
The question "There is a quality difference between the mangos from the supermarket and the ones from the vegetables and fruits specialist was removed from the Kenyan questionnaire.	In Kenya most mangos are sold along roads and in local markets. Therefore the comparison between the supermarket and local salesmen and –women did not seem relevant, although supermarkets do sell mangos.

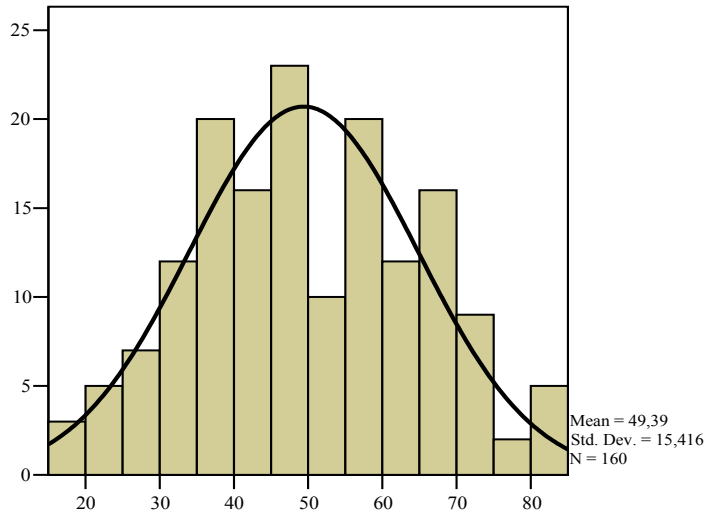
Table 3. Differences between the Dutch and the Kenyan questionnaire.

4. CONSUMERS OF MANGOS IN THE NETHERLANDS

4.1 Introduction

For the study in the Netherlands a random sample of 1000 respondents was asked by post to fill in the questionnaire. Out of this sample 160 respondents sent back their questionnaires. Although this is supposed to be a common response figure, it remains terribly low. Fear that most respondents have an interest in this subject that is above-average of the general consumer could be justified. If this actually were the case it could cause bias.

The youngest respondent was 15 years old and the oldest was 85 years old; 42% of the respondents were male and 58% female. The age deviance of the Dutch respondents is shown in the graph below. Some other characteristics can be found in the List of Graphs at the end of this report. Cross tabulations were generated using SPSS. In this same analysis a Chi-square test was carried out. No significant results were reported. The cross tabulations are shown below.



Graph 1. Age deviance of the Dutch respondents.

4.2 Results

Univariate Analysis of Variance was carried out to describe differences between non-users, light users, regular users and heavy users of mangos. The fixed variable was how often people eat mangos. The results are shown on the next page. Significant scores ($p < 0,05$) have been marked with an asterisk **(*)**.

Item	*Non-users (seldom or never)*	*Light users (about 5 times per year)*	*Regular users (about twice per month)*	*Heavy users (Weekly)*	*Total*
	M (SD) *n*	*M (SD)* *n*	*M (SD)* *n*	*M (SD)* *n*	*M (SD)* *n*
I ate my first mango out of curiosity.	4,7 (2,22) 49	4,4 (2,09) 61	5,0 (2,12) 17	4,8 (2,32) 8	4,6 (2,14) 135
When shopping the price of mango is very important for me.	4,5 (1,96) 48	4,3 (2,13) 61	4,9 (1,97) 17	4,6 (2,20) 8	4,5 (2,04) 134
I seldom eat mangos because I think they are too special.	2,8 (2,07) 49	2,4 (1,78) 61	1,5 (0,87) 17	2,5 (2,78) 8	2,4 (1,90) 135
I only buy mango when I run into them and feel like eating them.	4,9 (1,86) 47	4,8 (2,14) 60	3,7 (2,34) 17 **(*)**	2,5 (2,51) 8 **(*)**	4,52 (2,170) 132

Table 4. Mean scores of different users of mangos in the Netherlands on the Intrinsic Quality Cues

Overall it was found that the respondents were only slightly motivated by curiosity to buy mangos. Price was only moderately important to them, and the respondents were hardly discouraged by the product's specialty. It was found that non-users and light users are more likely than regular users and heavy users to buy mangos when they run into them and feel like eating them ($F(3) = 4{,}143$; $p = 0{,}008$).

The data in Table 5 show that most respondents agreed on the beauty and the freshness of mangos, given the high mean scores on the first two items. Furthermore most respondents indicated they would prefer their mango to be smaller than it is now. On average respondents reported it was not that important what a mango looked like in general. The results show that heavy users have a different feeling about the price of mangos in comparison to other fruits than the light users. The latter reported they disagreed with the proposition that mangos are expensive compared to other fruits, while the heavy users seemed to agree ($F(3) = 4{,}271$; $p = 0{,}007$). The origin of mangos is not important to the Dutch respondents. Also the difference in quality between the supermarket and the specialist in fruits remains rather vague. Finally the respondents were not worried about the labour conditions in which mangos are picked and processed.

Item	*Non-users (seldom or never)*	*Light users (about 5 times per year)*	*Regular users (about twice per month)*	*Heavy users (Weekly)*	*Total*
	M (SD) *n*	*M (SD)* *n*	*M (SD)* *n*	*M (SD)* *n*	*M (SD)* *n*
I think mango is a beautiful fruit.	5,4 (1,45) 48	5,5 (1,47) 62	5,5 (1,55) 17	6,3 (0,89) 8	5,5 (1,45) 135
The colours of a mango seem fresh.	5,5 (1,30) 47	5,7 (1,23) 62	5,7 (1,17) 17	5,0 (2,33) 8	5,6 (1,33) 134
I would like my mango to be smaller.	5,0 (1,55) 47	5,3 (1,90) 61	5,2 (2,07) 16	5,4 (2,20) 8	5,2 (1,81) 132
I do not think it is important what a mango looks like.	4,6 (2,06) 47	4,3 (2,05) 62	4,0 (2,00) 17	4,6 (2,13) 8	4,4 (2,03) 134
I think the mango is expensive compared to other fruits.	2,8 (1,39) 46 **(*)**	3,6 (1,63) 61	3,6 (1,41) 16	4,6 (1,85) 8 **(*)**	3,4 (1,59) 131
I am usually interested where a mango comes from.	3,0 (1,96) 48	3,2 (2,07) 62	3,9 (2,32) 17	4,0 (2,98) 8	3,2 (2,12) 135
There is a difference in quality between mangos from the supermarket and those from the specialist in fruits.	4,3 (1,39) 44	4,0 (1,95) 59	4,8 (2,08) 16	3,6 (2,56) 8	4,2 (1,84) 127
I am worried about the labour conditions in which mangos are picked and processed.	3,5 (1,85) 48	4,0 (1,82) 59	3,2 (1,91) 13	3,0 (2,20) 8	3,6 (1,87) 128

Table 5. Mean scores of different users of mangos in the Netherlands on the Extrinsic Quality Cues

Although all respondents agreed that mangos have a good taste according to Table 6, regular and heavy users were far more convinced than the non-users on this issue ($F(3) = 4{,}130$; $p = 0{,}008$). All Dutch respondents indicated they would not like their mango to be sweeter. No significant differences among users can be reported however. Regular and heavy users of mangos reported that the fruit is easy to peel, while both non-users and light users indicated not to be so sure about this ($F(3) = 6{,}014$; $p = 0{,}001$). Another significant result was reported on the proposition whether one could easily determine whether a mango was ripe. In particular regular users and also heavy users indicated they thought this was easy, while non-users did not agree it was that easy ($F(3) = 5{,}507$; $p = 0{,}001$). The fibres in the pulp of mangos do not seem important to the respondents. Heavy users reported they did not like it when a mango had to ripen for a few days before they could eat it, however, the other respondents did not seem to be bothered. All respondents indicated that dirty hands when peeling a mango were not discouraging.

Item	*Non-users (seldom or never)*	*Light users (about 5 times per year)*	*Regular users (about twice per month)*	*Heavy users (Weekly)*	*Total*
	M (SD) *n*	*M (SD)* *n*	*M (SD)* *n*	*M (SD)* *n*	*M (SD)* *n*
I think mango has a good taste.	5,3 (1,55) 47 **(*)**	5,9 (1,07) 62	6,4 (1,54) 16	6,3 (1,25) 7	5,8 (1,38) 132
I would like my mango to be sweeter.	3,2 (1,86) 48	2,9 (1,84) 62	3,1 (2,18) 16	1,7 (1,11) 7	3,0 (1,87) 133
A mango is easy to peel.	3,8 (1,99) 47 **(*)**	4,1 (1,94) 62 **(*)**	5,7 (1,67) 15	6,0 (0,82) 7	4,3 (2,00) 131
I can easily determine whether a mango is ripe.	3,6 (1,98) 48 **(*)**	4,7 (1,90) 61	5,5 (1,64) 15	5,1 (1,95) 7	4,4 (2,00) 131
I think the fibres in the pulp of mango are nasty.	4,3 (1,88) 47	4,4 (1,88) 62	5,0 (1,75) 16	4,0 (2,71) 7	4,4 (1,90) 132
I do not like when a mango needs a few days to ripen before I can eat it.	3,8 (1,79) 47	3,8 (1,88) 62	4,0 (2,17) 15	5,6 (2,51) 7	3,9 (1,93) 131
I do not think it is a problem when my hands get dirty when peeling a mango.	5,2 (1,82) 47	5,3 (1,84) 62	5,74 (2,09) 15	6,1 (2,27) 7	5,4 (1,88) 131

Table 6. Mean scores of different users of mangos in the Netherlands on the Experience Quality Attributes

The Dutch respondents were on average convinced that mangos are healthy to eat, as Table 7 indicates. In addition they also believed that mangos contain many vitamins. On issues like the use of pesticides and the consequences of growing mangos for the soil, the respondents were not univocal. It seems many people did not really know what to answer to these questions. Most participants responded positive to the statement that mangos are an exclusive product. Whether this is positive or negative could be debated. The highest mean among the Dutch respondents was reported on the last item. All respondents indicated it was in their opinion very important that the people who produce mangos do this under proper working conditions.

Item	*Non-users (seldom or never)*	*Light users (about 5 times per year)*	*Regular users (about twice per month)*	*Heavy users (Weekly)*	*Total*
	M (SD) *n*	*M (SD)* *n*	*M (SD)* *n*	*M (SD)* *n*	*M (SD)* *n*
I am convinced that mangos are healthy.	5,8 (1,15) 48	5,8 (1,03) 62	6,4 (0,89) 16	6,3 (1,11) 7	5,9 (1,09) 133
There are many vitamins in mangos.	5,4 (1,19) 48	5,5 (1,15) 61	5,7 (1,12) 17	5,8 (1,39) 8	5,5 (1,17) 134
I think that not many pesticides are used on mangos.	3,9 (1,35) 48	3,8 (1,46) 60	4,8 (1,68) 17	4,5 (2,62) 8	4,0 (1,55) 133
The growing of mangos does not exhaust the soil.	4,2 (0,79) 46	4,2 (1,28) 57	4,3 (1,45) 15	4,8 (1,98) 8	4,2 (1,20) 126
I think mango is an exclusive product.	5,1 (1,55) 49	4,8 (1,67) 62	5,2 (1,82) 17	4,6 (2,07) 8	5,0 (1,66) 136
I think it is important that people who produce mangos do this under proper working conditions.	6,1 (1,26) 49	6,3 (1,31) 62	5,7 (1,65) 17	6,8 (0,71) 8	6,2 (1,32) 136

Table 7. Results of Analysis of Variance on the Credence Quality Attributes

4.3 Conclusions

One of the research questions was how Dutch consumers perceive quality of the market for mangos in the Netherlands. First is should be stated that the number of heavy users of mangos is quite low (n = 8). In addition it is expected that the respondents have an interest in the subject that is above-average.

The Dutch consumers indicated that mangos are not too special to buy them (M = 2,44). Furthermore it appeared that for non-users and light users the purchase of mangos is much more an impulsive action than for people who eat them more regularly. On average most respondents indicated they see mango as a beautiful and fresh fruit, although it should be smaller. According to respondents that buy mangos regularly or often the fruit is rather expensive compared to other fruits, while in particular non-users seem to disagree. It is likely that this has to do with the fact that non-users are not confronted with the price of mangos and are therefore not bothered by the price.

Although regular and heavy users are more convinced than the others, all consumers seem to agree that mangos have a good taste. In addition most respondents seem univocal that mangos should not be sweeter than they are nowadays (M = 2,96). Most regular and heavy users of mangos seem to agree that mangos are easy to peel and that it is not difficult to determine whether they are ripe, while the other users are not that sure. Clearly this could be caused by a

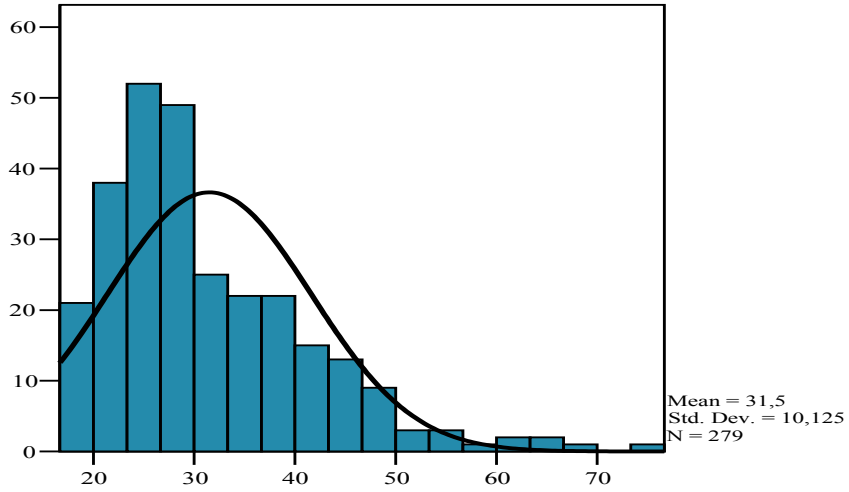
different level of experience concerning the consumption of mangos. Finally most respondents feel that mangos are healthy and in addition they indicate it is important to them that people who produce mangos live under proper conditions.

In sum, regular and heavy users of mangos are obviously positive about the quality of mangos, although it should be mentioned that the number of heavy users is quite low. Non-users and light users left some suggestions why they might not be consuming mangos that often, but no very clear indications were reported. Some opportunities will be discussed in chapter 7.

5. CONSUMERS OF MANGOS IN KENYA

5.1 Introduction

In four different areas of Kenya 280 respondents were interviewed. The oldest respondent reported to be 75 years of age and the youngest was 18 years old. The age deviance of the Kenyan population is shown in the graph below. Of the respondents 32.1% reported to be female, leaving 67.9% to be male. Other general characteristics are shown in the List of Graphs at the end of this report. Below the cross tabulations of the different characteristics are shown. In this same analysis a Chi-square Test was carried out. The significant results are reported below each of the relevant tables. The alpha (α) used was 0,05.



Graph 2. Age deviance of the Kenyan consumers

5.2 Results

		How often do you eat mangos?					Total
		Seldom or never	About five times per year	About twice per month	Weekly	Daily	
What is your gender?	M	32	9	29	94	23	187
	F	8	1	5	51	21	86
Total		40	10	34	145	44	273

Table 8. Cross tabulation on gender and the frequency of eating mangos.

In this analysis the reported significance from the Chi-square test is *p = 0,004* with degrees of freedom DF = 4. There are many more male respondents that do not consume many mangos (from non-users to regular users). Among the heavy and very heavy users the numbers of male and female respondents seems more proportionally, while among the very heavy users nearly as many women as men were found. This seems to indicate that Kenyan women eat more mangos than males do.

		In what season do you eat mangos?					Total
		Winter	Spring	Summer	Fall	All year round	
From which region are you?	Coast	21	5	13	5	32	76
	Nairobi	2	15	29	5	42	73
	North-Eastern	3	8	7	1	18	37
	Western	6	10	8	10	22	56
Total		32	38	57	21	114	262

Table 9. Cross tabulation on descend and seasonality of consumption.

Table 9 reports a significance from the Chi-square test is *p = 0,000* with degrees of freedom DF = 12. In these results seasonality is reported in the two major urban areas of the country, Nairobi and the Coastal area. In the case of Nairobi this is not strange, since all year round mangos have to be transported to this area from other parts of the country. Funny enough also in the part of the country where most mangos are produced seasonality is still influencing consumers. One could wonder whether there is no seasonality in other regions.

In the analysis shown in Table 10 on the next page the reported significance from the Chi-square test is *p = 0,035* with degrees of freedom DF = 12. Despite the significant results is does not seem there are big differences between the different categories of mango users. Most people consume mangos just as fruit. Only heavy and very heavy users reported different applications of mangos.

		What do you use mangos for?				Total
		Fruit salad	Cooking	As fruit	Different	
How often do you eat mangos?	Seldom or never	1	1	34	2	38
	About five times per year	0	0	10	0	10
	About twice per month	2	0	29	1	32
	Weekly	13	0	111	7	131
	Daily	11	0	28	2	41
Total		27	1	212	12	252

Table 10. Cross tabulation on the frequency of mango consumption and the use of mangos.

		How often do you eat mangos?					Total
		Seldom or never	About five times per year	About twice per month	Weekly	Daily	
What region are you from?	Coast	13	3	1	46	15	78
	North-Eastern	10	3	8	13	5	39
	Nairobi	9	4	14	60	10	97
	Western	8	0	11	26	14	59
Total		40	10	34	145	44	273

Table 11. Cross tabulation on descend and the frequency of mango consumption.

In this analysis the reported significance from the Chi-square test is $p = 0,001$ with degrees of freedom DF = 12. The result that draws attention is the fact that from the consumers of mangos from the North-Eastern part of Kenya, over 25% belongs to the category of non-users. In the other regions no such percentages can be reported and most respondents by far belong to the groups of heavy and very heavy users.

Univariate Analysis of Variance was carried out to describe differences between non-users, light users, regular users, heavy users and very heavy users of mangos. The fixed variable was how often people eat mangos. The results are shown below. Significant scores ($p < 0,01$) have been marked with an asterisk **(*)**.

Item	*Non-users (seldom or never)*	*Light users (about 5 times per year)*	*Regular users (about twice per month)*	*Heavy users (Weekly)*	*Very heavy users (daily)*	*Total*
	M (SD) *n*	*M (SD)* *n*	*M (SD)* *n*	*M (SD)* *n*	*M (SD)* *n*	*M (SD)* *n*
I ate my first mango out of curiosity.	2,3 (1,14) 38	3,3 (0,87) 9	2,9 (1,28) 32	2,8 (1,35) 143	2,6 (1,29) 42	2,7 (1,30) 264
When shopping the price of mango is very important for me.	3,4 (1,25) 39	3,5 (1,08) 10	3,9 (0,95) 33	3,6 (1,12) 142	3,3 (1,30) 44	3,5 (1,16) 268
I seldom eat mangos because I think they are too special.	2,3 (1,23) 39	2,8 (1,30) 9	2,3 (1,15) 34	2,4 (1,24) 143	2,7 (1,34) 43	2,5 (1,24) 268
I only buy mango when I run into them and feel like eating them.	3,1 (1,29) 40	3,2 (1,32) 10	3,2 (1,20) 34	2,7 (1,25) 144 **(*)**	2,5 (1,19) 44 **(*)**	2,8 (1,26) 272

Table 12. Mean scores of different users of mangos in Kenya on the Intrinsic Quality Cues

The motive of curiosity does not seem to be of great importance for Kenyan consumers to buy mangos. When price is concerned, regular users seem to be moderately interested in this. The non-users amongst the respondents indicate the reason they do not eat mangos is not because they think mangos are too special. One significant result was reported from the first table. Light users and regular users seem to treat mangos as a 'impulse good' while heavy and very heavy users indicate they do not share this reason to buy the fruit ($F(4) = 2,728$; $p = 0,030$).

All respondents agreed on the proposition that mangos are a beautiful kind of fruit, according to Table 13. The only remark that can be made is that light users were not as convinced of this beauty than the other categories of respondents ($F(4) = 2,370$; $p = 0,053$). The Kenyan respondents agreed on the second proposition about the fresh appearance of mangos. There was some struggle about the question whether mangos should be smaller in the future. Most categories of consumers, in particular the non-users and the heavy users, reported their disagreement with this suggestion, while light users were not really convinced on this matter ($F(4) = 3,943$; $p = 0,004$). An often heard argument during the interviews was "the bigger, the better". All respondents moderately indicated they felt the general appearance of a mango is important. Compared to other fruits mangos are not expensive according to the respondents. Although most respondents indicated earlier in the interview that they liked 'Apple' mangos from the Coastal area best (See the List of Graphs), they did not confirm that they are really interested where their mango is coming from.

Item	*Non-users (seldom or never)*	*Light users (about 5 times per year)*	*Regular users (about twice per month)*	*Heavy users (Weekly)*	*Very heavy users (daily)*	*Total*
	M (SD) *n*	*M (SD)* *n*	*M (SD)* *n*	*M (SD)* *n*	*M (SD)* *n*	*M (SD)* *n*
I think mango is a beautiful fruit.	4,2 (0,43) 40	3,8 (1,14) 10 **(*)**	4,4 (0,50) 34	4,2 (0,72) 145	4,1 (0,81) 44	4,2 (0,70) 273
The colours of a mango seem fresh.	4,0 (0,93) 40	4,2 (0,44) 9	4,2 (0,57) 33	3,9 (0,88) 143	4,1 (0,91) 42	4,0 (0,85) 267
I would like my mango to be smaller.	1,7 (0,61) 38	2,7 (1,42) 10 **(*)**	2,1 (0,78) 34	1,9 (0,79) 145	2,2 (1,02) 42	2,0 (0,85) 269
I think it is important what a mango looks like.	3,5 (1,26) 40	3,6 (0,84) 10	3,6 (1,18) 34	3,6 (1,16) 141	3,5 (1,30) 43	3,6 (1,18) 268
I think the mango is expensive compared to other fruits.	2,2 (1,04) 40	2,4 (1,27) 10	2,3 (0,91) 34	2,1 (0,94) 145	2,0 (0,68) 42	2,2 (0,93) 271
I am usually interested where a mango comes from.	3,0 (1,31) 40	3,7 (1,32) 9	3,2 (1,18) 34	3,1 (1,23) 145	3,4 (1,18) 43	3,2 (1,24) 271
I am worried about the labour conditions in which mangos are picked and processed.	3,0 (1,17) 39	3,5 (0,85) 10	3,0 (1,16) 34	3,0 (1,11) 144	2,9 (1,34) 44	3,0 (1,15) 271

Table 13. Mean scores of different users of mangos in Kenya on the on the Extrinsic Quality Cues

The results from Table 14 show that most respondents were familiar with the fruit of mango. Most of them indicated they liked the taste of the fruit. Most respondents were also moderately interested in a sweeter mango variety. Kenyans in general responded it is easy to peel a mango and not difficult to determine whether it is ripe. The fibres in mangos, thought to be a potential source of irritation to consumers, were not experienced to be annoying by most Kenyans. In addition the propositions that mangos need some days to ripen before consumption and getting dirty hands when peeling the fruit did not seem to bother the Kenyan respondents.

Item	*Non-users (seldom or never)*	*Light users (about 5 times per year)*	*Regular users (about twice per month)*	*Heavy users (Weekly)*	*Very heavy users (daily)*	*Total*
	M (SD) *n*	*M (SD)* *n*	*M (SD)* *n*	*M (SD)* *n*	*M (SD)* *n*	*M (SD)* *n*
I think mango has a good taste.	4,3 (0,59) 40	4,1 (0,60) 9	4,4 (0,49) 34	4,2 (0,71) 145	4,1 (0,87) 44	4,2 (0,70) 272
I would like my mango to be sweeter.	3,8 (1,08) 40	3,5 (1,08) 10	4,1 (0,83) 34	4,0 (0,91) 145	3,9 (1,10) 44	3,9 (0,97) 273
A mango is easy to peel.	3,9 (0,83) 40	3,6 (1,17) 10	3,8 (1,01) 34	3,9 (0,83) 144	3,9 (0,95) 44	3,9 (0,89) 272
I can easily determine whether a mango is ripe.	3,7 (0,97) 40	3,7 (1,16) 10	4,0 (0,78) 34	3,9 (0,81) 144	4,1 (0,91) 42	3,9 (0,87) 270
I think the fibres in the pulp of mango are nasty.	3,0 (1,24) 40	2,9 (1,29) 10	3,3 (1,17) 34	3,0 (1,11) 142	2,8 (1,33) 43	3,0 (1,18) 269
I do not like when a mango needs a few days to ripen before I can eat it.	2,5 (1,16) 40	2,2 (1,03) 10	3,1 (1,25) 34	2,9 (1,16) 141	3,0 (1,38) 41	2,9 (1,21) 266
I do not think it is a problem when my hands get dirty when peeling a mango.	3,4 (1,27) 39	2,9 (1,29) 10	2,9 (1,10) 32	2,9 (1,26) 145	3,2 (1,44) 43	3,0 (1,28) 269

Table 14. Mean scores of different users of mangos in Kenya on the Experience Quality Attributes

In terms of the credence quality attributes most respondents agreed on the propositions that mangos are healthy to eat and that there are many vitamins in mangos (Table 15). The third and the fourth item, concerning the use of pesticides and the exhaustion of the soil because of the growth of mangos, were perhaps somehow misplaced. As appears from the answers as well, many respondents either did not seem to understand the question or simply replied they had no idea about the reality in these matters since they were not themselves involved in mango-growing. Respondents from Kenya were fairly consistent about the exclusivity of mangos: they all indicated mangos do not belong in this category of products, although perhaps a more convincing response should be expected, since mangos can be bought basically anywhere and are fairly cheap. Finally most respondents agreed that farmers should work under proper working conditions.

Item	*Non-users (seldom or never)*	*Light users (about 5 times per year)*	*Regular users (about twice per month)*	*Heavy users (Weekly)*	*Very heavy users (daily)*	*Total*
	M (SD) *n*	*M (SD)* *n*	*M (SD)* *n*	*M (SD)* *n*	*M (SD)* *n*	*M (SD)* *n*
I am convinced that mangos are healthy.	4,2 (0,86) 40	3,7 (1,06) 10	4,2 (0,69) 34	4,2 (0,76) 145	4,3 (0,69) 44	4,2 (0,77) 273
There are many vitamins in mangos.	4,0 (0,85) 40	3,8 (1,14) 10	3,8 (0,99) 34	3,9 (0,84) 144	3,9 (0,90) 44	3,9 (0,88) 272
I think that not many pesticides are used on mangos.	2,6 (0,94) 36	2,7 (1,06) 10	2,6 (0,62) 30	2,6 (0,91) 135	2,6 (1,06) 40	2,6 (0,91) 251
The growing of mangos does not exhaust the soil.	2,8 (0,89) 38	2,3 (1,04) 8	2,7 (0,77) 33	2,6 (0,94) 134	2,8 (1,23) 44	2,7 (0,97) 257
I think mango is an exclusive product.	2,5 (1,30) 39	2,6 (1,42) 9	2,2 (1,24) 33	2,5 (1,24) 139	2,6 (1,28) 44	2,5 (1,26) 264
I think it is important that people who produce mangos do this under proper working conditions.	3,9 (1,03) 39	3,8 (0,97) 9	4,0 (1,08) 33	3,9 (0,98) 141	3,9 (1,03) 44	3,9 (1,00) 266

Table 15. Mean scores of different users of mangos in Kenya on the Credence Quality Attributes

5.3 Conclusions

This chapter tried to find an answer what the opinion of the Kenyan consumers is in regard to the perceived quality of mangos. First the Chi-square tests delivered some interesting results. Table 8. for instance suggests that in Kenya females eat more mangos than males. Furthermore in the Coastal area seasonality was reported, while it was expected that mangos would in this area be around all year. Perhaps they become more sporadic for parts of the population in some periods of the year, since price fluctuations have been reported as well. Although heavy and very heavy consumers in Kenya reported different applications of mangos as well, the majority of the respondents consumes mango just as fruit. Perchance the option of using mango juice should have been implemented in the questionnaire, since this answer was reported occasionally, but in practise mango juice is sold all over the country and consumed quite often. The final interesting figure resulting from the Chi-square tests was that in the North-Eastern part of Kenya over 25% of the population reported to be non-user. It

appears that in particular the Somalian community in this area hardly consumes mangos since they believe this causes diseases such as malaria.

Comparative to the Dutch consumers, Kenyan light and regular consumers indicated to treat mangos as an impulse good, while heavy and very heavy users disagree on this. Most Kenyans did report positive on the appearance of the fruit. Furthermore all Kenyans indicated they would not like their mango to be smaller, but interestingly in particular non-users were most outspoken on this issue. Perhaps they could be triggered to consume more fruit with bigger mangos? The respondents agreed that mangos are not expensive compared to other fruits, which was expected since many fruits are cheap in Kenya.

On a whole Kenyans seem familiar with mangos. They reported they feel mangos are easy to peel and that they can easily determine whether a mango is ripe. In addition the respondents all indicated that they like the taste of the fruit. In addition some respondents seemed to favour a sweeter variety of mangos if it were available, in particular the regular users.

Most respondents, including the non-users, indicated they feel mangos are healthy to eat and that the fruit contains many vitamins. Also in North-Eastern Kenya most respondents indicated to agree on this matter, although some of them believe eating mangos causes diseases. The interesting thing is that these myths do not need to be supported by facts to be kept alive. In the end, although less convincing than the Dutch respondents, Kenyans as well indicated that they thought it was important that farmers producing mangos do this under proper working conditions.

6. PRODUCERS OF MANGOS IN KENYA

6.1 Introduction

Although this study puts emphasis on the demand side of the market for mangos by investigating consumer behaviour, a strategic advice for ICRAF should consider the supply side of the market as well. Information was gathered from previous studies carried out by scientists of ICRAF and conversations with experts from involved organisations. In the graph below one can see the mango production statistics in Kenya during the past few years.

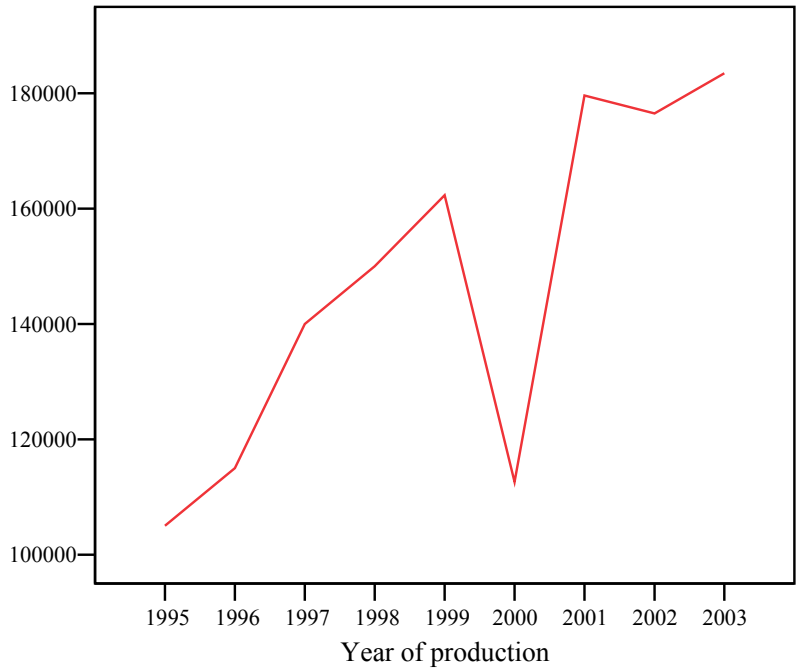


Figure 7. Mango production in Kenya in metric tonnes (*FAO, HCDA, 2005*)

The enormous decline in production in 2000 can be explained by the drought of 1999. In general it seems the mango production in Kenya has been growing steadily. To typify the size of the Kenyan production of mangos from a global perspective a scheme by Jedele, Hau & Von Oppen (*2003*) was updated with the latest FAO statistics (*2005*). This scheme is shown on the next page. As one can see Kenya is not an important player in the world market for mangos. Even when only considering the production figures of other countries from the African continent, Kenya falls behind Nigeria, Egypt, Madagascar and Tanzania (*FAO, 2005*).

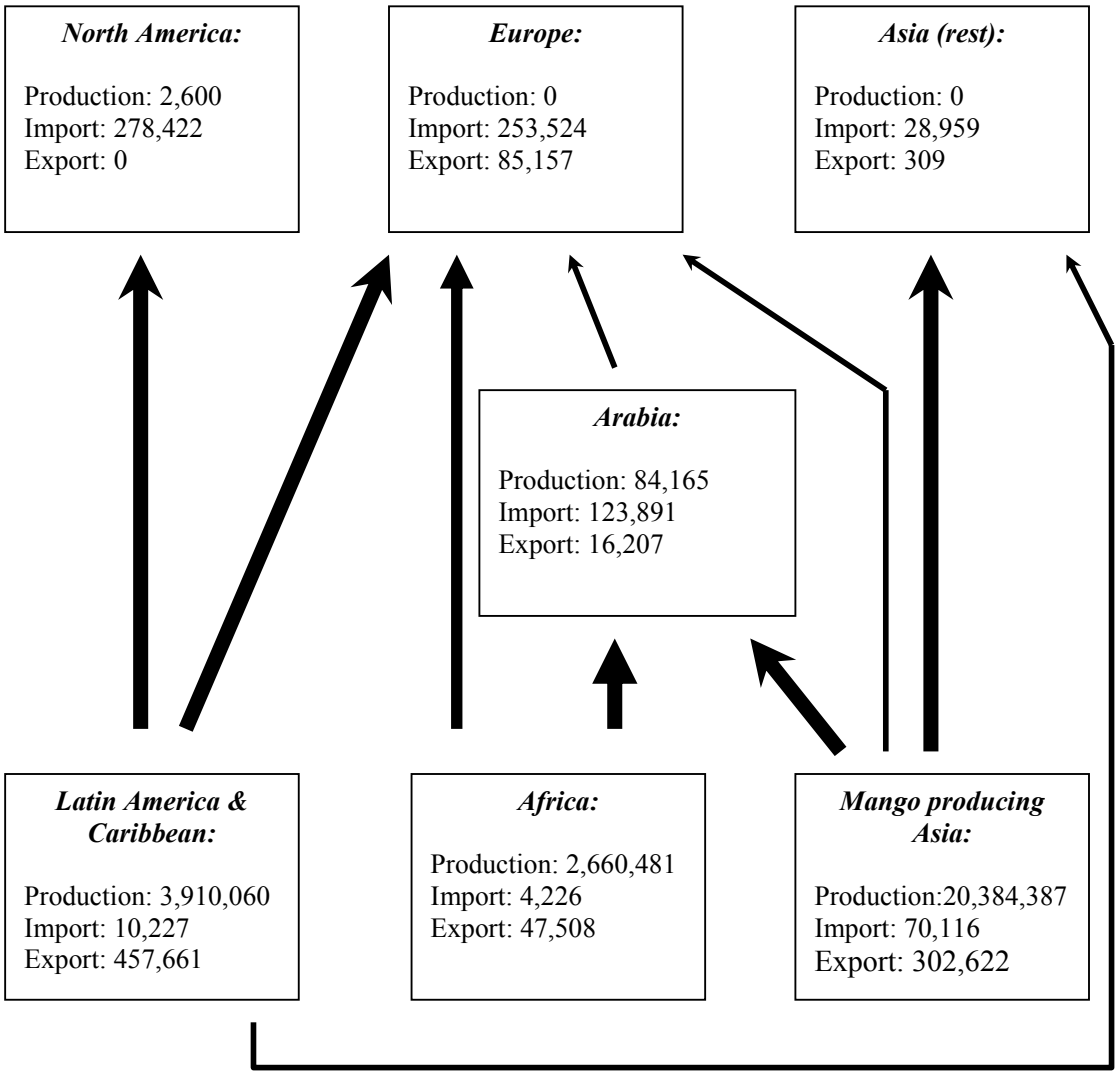


Figure 8. World Mango Flows 2003 in metric tonnes (*FAO, 2005*)

6.2 Relevant studies

Zeila (*2005*) conducted a relevant study in the field of mango growing in Kenya. His research focuses on project areas of ICRAF in Garissa, Tana River and Baringo. It appeared that most farmers – respectively 96%, 100% and 63% (*Zeila,* 2005) – in these regions are growing indigenous varieties of mangos. Reasons might be limited knowledge amongst the farmers on the existence of exotic varieties with higher yield or the very limited number of tree nurseries in operation. The variety of Apple mango was reported to be most popular.

Farmers from Baringo reported to sell most of their produce themselves, while respondents from Garissa and Tana River reported to sell most of their produce to middlemen. Although

especially Garissa is quite populated for the North-Eastern area of Kenya, a big part of the produced mangos, about 40%, is sold outside the district. Indeed, 71% of the farmers in Garissa reported that they sold most of their mangos to middlemen from outside the district, usually against ridiculous tariffs of about one-seventh of the potential value (*Zeila, 2005*). While this might lead to the suggestion that farmers need to get rid of this extra chain in the selling cycle, another study shows that many farmers are content with the existence of middlemen since they provide a certain market for products that would otherwise perhaps not be sold at all. Furthermore, even when a market is guaranteed there remain many obstacles such as poor infrastructure, unreliable rainfall, lack of inputs, low prices and over taxation (*Omosa, 2002*).

Because of the growth of the town (especially influx from Somalia and Ethiopia) Garissa seems a promising market for farmers in these regions. The markets mostly quoted in the research of Zeila however were Mombasa, Nairobi and Wajir. In order to make these long trips successful, in Tana River the farmers have formed the Tana Fruit Cooperative Society. The intention is to deposit 500 mangos per farmer in order to facilitate transportation to Nairobi and Mombasa at reasonable costs. So far this project has not been successful (*Zeila, 2005*).

The main constraints that farmers from the different areas reported are unsatisfactory markets (52,5% in Garissa, 72% in Tana River and 50% in Baringo) and pests and diseases (40% in Garissa, 27,5% in Tana River and 38,8% in Baringo). Other problems faced are transportation problems, for instance through poor road conditions and high additional costs, bribes that need to be paid to local authorities, flooding of farms during wet seasons, monkeys and thieves during harvesting season and cattle feeding on young mango trees.

In short, the farmers in these districts face many problems while growing mangos and are struggling to get their produce sold at good value. One promising aspect from the research is that nearly all farmers in the three districts reported increasing numbers of mangos grown on their farms.

Dijkstra (*1996*) published an interesting study on food assembly markets in Africa. Again, the existence of middlemen comes into discussion. Apparently many farmers do not mind selling to middlemen because they lack confidence to deal with urban customers. Whether this is justified could be debated, however, a very real problem is the language barrier when urban areas are outside the farmers district and the difficulty of finding a selling spot, since stalls are usually not available (*Dijkstra, 1996*).

Contrary to the Tana Fruit Cooperative Society (*Zeila, 2005*) Dijkstra reports of the successful conjugation of forces in one of his research areas: apparently the Taita Horticultural Produce Cooperative Society sells the products directly to retailers and institutions through a stall in Mombasa wholesale market (*Dijkstra, 1996*). It should be noted that this company gained success since they focused mainly on superior quality produce that was in high demand from tourist hotels.

Humphrey, McCulloch & Ota wrote an article on the impact of European market changes on employment in the Kenyan horticultural sector (*2004*). According to them, in the 1990s

Kenya grew to be an important player in the export of vegetables and fruits to the European Union and in particular the United Kingdom. They argue that changes might be on the horizon because of policy changes in the EU. Since Kenya is an ACP country they have tariff-free access to the EU market for horticultural products (*Humphrey, McCulloch & Ota, 2004*). As predicted in an earlier study, when these ACP preferences would be eliminated, Kenya would have to deal with many more competitors (*Stevens, 2001*). This would certainly be the case for mangos, in which most produce is grown in Asia and Central America, where many countries do not enjoy the favourable ACP status.

6.3 Involved organisations

There are numerous sectors involved in the production, transport and sales of mangos and not all of them can be mentioned. In this section one can find some information on relevant issues in the field of mangos during the time of study, according to experts from different organisations.

Horticultural Crop Development Authority (HCDA)
The role of the HCDA is mostly training people, demonstrating techniques and facilitating the process of fruit and vegetable growth where possible. Field workers train local farmers in matters of all production phases up until marketing. Furthermore the HCDA does inspection checks regularly to test the quality of mangos that are grown for export purposes.

Some remarks were made about the export of mangos from Kenya. According to the HCDA only 4% of the mangos produced in Kenya are exported, so the bulk is marketed locally. Of these exported mangos 85% goes to Arabia (in particular Saudi-Arabia and the United Arab Emirates) and the rest goes to the European Union. Most chances for local farmers are at the local market according to the HCDA. As for most African countries, many countries in the region have a lot of mango growers themselves, leaving little opportunity for export from Kenya. Other countries such as South Africa do not grow mangos themselves, but usually protect their own markets strictly, making it less interesting for farmers to focus on these regions.

The HCDA mentioned the major concerns in the mango market these days. Harvesting techniques of in particular big mango trees are poor according to the organization, leaving a lot of produce unmarketable. Furthermore people do not have refrigerated vehicles, making transport of mangos to the airport or the harbour very difficult if not impossible. The HCDA does posses these trucks, but the costs are only payable if farmers use them group wise. This has proven to be difficult to realise, first because of the different varieties of mangos that are grown and secondly because most farmers do not see the need to pay for the benefit of some other farmer as well (*HCDA, 2005*). A third problem is that many farmers tend to harvest their crop too early, simply because they need the money to make a daily living.

So far the HCDA knows of two co-operations of mango farmers, located in Tana River and Malindi. In the future perhaps investors could play an important role in the process of bringing farmers together.

International Centre of Insect Physiology and Ecology (ICIPE)
One of the major concerns of mango growers these days is a new type of fruit fly that came into Kenya from Sri Lanka a few years ago. Between 15% up to an occasional 80% of marketable products has been destroyed by the fruit flies so far, with an average loss between 25% and 35%. The flies attack in two stages, first before the harvest – and thereby declining the number of fruits – and secondly the flies attack the fruits once they have been picked, reducing the number of marketable products. Mangos that prove to be infected by these fruit flies will without doubt be banned from international markets.

According to scientist of the ICIPE there are two ways to handle these flies. The first method implies cutting off a production area and eradicating the flies within. Because the closing of the area this method is rather expensive. It is primarily used in Latin America, where the expenses of this kind of operation are usually paid for by the U.S.

On a smaller scale – such as in most African countries – there is no economic justification nor sufficient capacity to use this method. To handle this problem ICIPE has been involved in the development of a so-called Integrated Pest Management package, which will hopefully be available within two years. This package would reduce the damage of the crop to a loss between 2% and 3%. The method consists of two phases: first farmers would have to apply a BEET-treatment, in other words putting a paste on the trunk of mango trees. The advantages are that this is cheap and furthermore that no weekly application is required. Second grains need to be sowed under the mango trees in order to kill the larvae of the fruit flies.

Small-scale farmers in Kenya nowadays just pick the good and marketable fruit of the trees and leave the rest. Treatment of fruit flies is too expensive for them as individuals. Another problem is that many farmers are advised wrongly, resulting in the use of too many pesticides to have a product worth exporting. In these cases post-harvest treatment would be required to make the product marketable again, but the methods used in this process are not allowed in for instance the European Union. The IPM package as described will not be cheap for individual farmers either, but according to the ICIPE the price will be affordable economically justifiable in terms of for instance a village.

Kenya Plant Health Inspectorate Service (KEPHIS)
The role of KEPHIS is to determine the health status of mangos that are meant for export. Inspectors try to determine whether there are no pests or deceases on the fruits. Furthermore the amount of residues of pesticides is tested. When this figure is too high, products will not be allowed to leave the country. The latter is nowadays the most encountered problem.

In terms of export the greatest problem that most farmers are facing are the high quality standards posed by for instance the European Union. The issue of traceability was raised, implying that inspectors from an importing country want to know exactly where the mangos they are importing are originally coming from. Especially countries from the European Union need to know exactly from what tree a certain mango is coming. This makes the process of exporting very expensive. A possible solution would be that the European Union invests in this issue itself. For the time being many exporters seem to have chosen to focus on the Arabian market, where most of the Kenyan mangos are going. According to KEPHIS this is

completely understandable since the Arabians tend to be less demanding than the Europeans when it comes to importing fruits and in addition might even pay more.

On the issue of rejection of mangos for export, KEPHIS indicated that only 10% of the mangos could not be exported. This number is low, because most of the testing of the produce is realised by the HCDA.

6.4 Conclusions

Although Kenya is producing quite an amount of mangos and the number of production has increased over the past ten years, this success should be put in perspective. Most mangos in the world market come from Asia, with Latin America and the Caribbean holding a comfortable second place. Although the bulk of Asian mangos stays on the continent itself, most Latin American and Caribbean producers do focus on export to other continents and are therefore tough competition for countries from Africa. Also within Africa Kenya does not belong to the dominant producers of mangos with an estimated 6% of the entire African production of mangos.

Some interesting studies among Kenyan farmers were conducted in the past. Many farmers apparently find it difficult to bring their produce to the markets and actually sell it. Consequently many middlemen are operating in the market. Occasionally farmers cooperate but so far with mixed results. There could be several reasons for this, including poor infrastructure, unreliable rainfall, unsatisfactory market knowledge and pests and diseases.

7. STRATEGY

The results as shown is the previous chapters are not all relevant for ICRAF. Accordingly the results from the research in both the Netherlands and Kenya and the information on the supply side of the market were filtered. In the first part of this chapter one will find the selected attractive opportunities that might be useful for ICRAF. Secondly these opportunities are translated into a strategy and finally an action plan for ICRAF is suggested.

7.1 Attractive opportunities

The data have been marked as attractive opportunities on the basis of significant results during the data analysis or when striking high or low mean scores were reported. Paragraphs have been titled according to the country and constructs of the model of Perceived Quality. These constructs were used in the analysis to keep a good overview and are used for the same purpose in this chapter as well.

7.1.1 The Netherlands

The general characteristics of the respondents from the Netherlands do not carry many surprises. Many Dutch consumers seem to use mangos as a 'summer fruit', consuming most of the fruit during this time of the year. This seems in particular the case for people that indicated to eat mangos rarely. Most respondents indicated to eat mangos solely as a fruit, while some people also used mango in their salads.

Intrinsic Quality Cues
Apparently most respondents agree on the proposition that mango is not a special fruit to them or at least this specialty is no reason for them not to eat the fruit. In addition the results indicate that people who do not buy mangos often see their purchase more as an 'impulse purchase' whereas people that indicated to eat mangos more regularly do not share this impulse scenario. This seems logical, since people who eat mangos often probably plan to buy them. It appears that people who do not eat mangos often need stimulation to purchase mangos.

Extrinsic Quality Cues
Most respondents were positive on the outer shell of mangos. When price is concerned, people who indicated to eat mangos on a weekly basis also reported the fruit to be expensive compared to other fruits, while people consuming mangos seldom or never disagreed on this. One could argue that people eating many mangos are faced with the costs of the fruit more often, or the other way around, that people who seldom or never eat mangos might not even have a clue about the cost of the fruit or at least spend that little on mangos that they do not share the same experience of costs. The positive dimension from this result could be that people who do not buy mangos often do not let the price influence their behaviour. On the other hand, if they would get more experienced they might change their opinion concerning the price of mangos.

Experience Quality Attributes
It makes sense that a difference in experience of taste is found between people that eat mangos regularly and those who seldom or never do this. A reason for a part of the respondents not to eat many mangos might simply be the fact that they do not like the taste of it. Especially people that reported to eat many mangos seemed to be opposed against the idea of introducing sweeter mangos. It also appeared that people who do not eat mangos often find – more than people who eat mangos regularly – that the peeling of the fruit is not easy. In addition these people indicated they find it more difficult to see whether a mango is ripe, instead of people who eat mangos regularly. In short, this analysis of experience attributes indicates some possible explanations why many respondents do not eat mangos regularly. Some just seem to dislike the taste, but some respondents indicated the peeling of the fruit was not easy or it was not easy to determine whether mangos were ripe. Lack of experience could be the most important reason for these complaints.

Credence Quality Attributes
The Dutch respondents seem to agree that mangos are healthy to eat and that mangos contain many vitamins. Furthermore the Dutch consumers indicated they feel it is very important that people who produce mangos do this under proper working conditions.

In short, Dutch consumers are in general no intensive 'mango-eaters'. The people who do eat mangos regularly seem to be satisfied with the product as it is now. The analysis suggested some indications how people could be persuaded to eat more mangos. First, people that eat mangos occasionally indicated they said their purchase was usually based on impulse. Perhaps these people should be stimulated differently or more often to buy mangos. Secondly most respondents agreed that mangos are healthy to eat, so perhaps this deserves more emphasis when marketing mangos in the Netherlands. Finally more emphasis could be put on the working conditions of the farmers that grow mangos. There are some brands in the Netherlands already selling fruits while emphasising the proper working conditions of farmers and the fair pay they are receiving for the produce. It appears that a part of the Dutch consumers is willing to pay something extra in order to indirectly help these farmers.

7.1.2 Kenya

The data suggested that females eat more mangos than males in Kenya. In addition it seems that especially in Nairobi and Mombasa the consumption of mangos is strongly depending on seasonality. This seems obvious for Nairobi, that has to 'import' its mangos from other parts of the country. Despite the high production figures in the Coastal area, there is apparently also strong seasonal influence in this region or perhaps the fluctuation of prices causes the instable consumption of mangos. It appeared also that people who do not eat many mangos only reported to simply eat the fruit, whereas people that reported to eat mangos often indicated to use the fruit for more purposes, such as salads or to make juice. It has to be mentioned as well that most of the respondents reported to eat just the fruit. The results show as well that one third of the respondents from the North-Eastern part of Kenya reported to eat mangos about five times per year or less. This number is very low, considering the fact that in particular in this region many mangos are grown. This result corresponds with the report that many farmers from this region do not sell their produce in this region itself (*Zeila, 2005*). An

explanation given by several respondents was the belief among in particular the Somalian community that mangos cause diseases such as malaria.

Intrinsic Quality Cues
People who do not eat many mangos did not have an outspoken opinion whether the purchase of mangos is an impulse purchase, whereas people who indicated to eat mangos more often indicated this impulse scenario was not the case. Apparently there are other reasons why these less consuming Kenyans do not eat mangos often.

Extrinsic Quality Cues
Most respondents agreed to a certain extent that mangos are beautiful and fresh. As appears from the data, in particular people that seldom eat mangos expressed their dislike of the suggested smaller mangos. Perhaps these people can be stimulated to buy more mangos by introducing bigger varieties. Finally the respondents indicated that most of them do not agree with the proposition that mangos are expensive compared to other fruits, which is not surprising.

Experience Quality Attributes
Some of the items from this category of questions give clear indications that many Kenyans are familiar with the (handling of) mangos. Most respondents for instance indicated that mangos are easy to peel and that they can easily determine whether a mango is ripe. Furthermore the respondents on average truly favoured the taste of mango. Finally many respondents indicated they would like their mango to be sweeter than it is nowadays. While there is extensive literature on mango varieties and their characteristics (*Griesbach, 2003*) particular sweet and big varieties have not been found. The results in this session suggest there might be chances for farmers to market more produce when growing new varieties.

Credence Quality Attributes
First most respondents indicated their belief that mangos are healthy to eat and that there are many vitamins in mangos. Many Kenyans also indicated they thought it was important that farmers who produced mangos do this under proper working conditions.

In short, Kenyans have shown to be familiar with mangos. The data suggest that different usages of mangos could be stimulated – since most respondents indicated to solely eat the fruit – but it should be mentioned that this has not been dealt with in the questionnaire either and therefore deserves more attention first. Interestingly in the North-Eastern part of the country – where notable many mangos are grown – over one fourth of the population indicates to eat mangos seldom. The reason for this low consumption has been mentioned and would for instance deserve attention in terms of informing people about the benefits of mangos. Another interesting suggestion was to introduce different varieties. One part of the respondents indicated they would like their mangos to be sweeter and there also seemed to be enthusiasm about bigger mangos.

7.2 Strategy

Some interesting suggestions came forward from the results. In order to determine an appropriate strategy for ICRAF in this particular field both the discussed opportunities and the weaknesses that came forward in the analysis are combined.

It is argued that the supply side of the market for mangos is most worrisome. Several studies have indicated the difficulties farmers have to cope with in order to market their produce. In Kenya the most mentioned obstacles are the extremely poor infrastructural facilities, pests and diseases that ruin crops or leave the fruit unmarketable, poor market knowledge and unreliable rainfall. Many farmers are operating on such a small scale that they are not able to overcome these problems by themselves – considering that diseases or the weather did not ruin their crops already – and therefore are depending on middlemen that usually overcharge the farmers, leaving them with hardly any profit.

When considering the export of mangos some issues need to be mentioned. First a serious decline of -69% in export figures was listed in 2003 by the Horticultural Crop Development Authority and not without reason. Next to the domestic problems that were just mentioned, exporting mangos brings more difficulties to light. The most important ones seem to be the high quality standards of the European Union (85% of the exported mangos goes to Arabia and not without reason) and the difficulty of catching up in this highly competitive market. Furthermore exporting results in more logistic problems for the farmers that need to bring their produce either to the airport in Nairobi or the harbour in Mombasa.

Considering the results from the study that was conducted in the Netherlands one could additionally wonder whether this targeted market of the European Union is really that potential. Although the Netherlands is of course not representative for the entire European Union, this study suggests that consumers are just not that used to mangos as for instance Kenyans are. The results from the Kenyan survey suggest a highly potential market and gave some indications for product improvement and potential new markets.

Combining these issues one must conclude that exporting mangos should be a long-term goal. There are simply too many obstacles and they can not be overcome all at once. Emphasis should be on the difficulties regarding local markets, since these should be solved first in order to compete internationally. In addition the local markets seem appropriate to sell many mangos already and the study suggests there are undeveloped markets as well. Some difficulties that farmers have to cope with are dealt with as we speak, for instance new pasts that will be introduced on short notice to fight pests and diseases. Furthermore this study can hopefully reduce a part of the gap on market knowledge that was mentioned as one of the problems as well.

It would be advisable for ICRAF that even though some of the domestic problems are dealt with intensively, effort is put into making farmers aware that cooperation is necessary. Although some associations have been reported, the results so far are mixed due to various reasons and therefore this deserves more emphasis. In the end farmers will be better off overcoming the obstacles together and in case of drawbacks that will certainly happen, risks will be shared. It is argued that the infrastructural problems can be faced better when

cooperating and in addition also overcoming problems such as the expected high costs of measures to fight pests and diseases. Since ICRAF aims to help in particular small-scale farmers these should be the strategic considerations before taking action, because these farmers are not likely to overcome these problems themselves. Exporting mangos can be a long-term goal, but at this moment most people are helped by aiming at the micro-level, that is the individual small-scale farmer. ICRAF should help these farmers by assisting them to determine their appropriate markets in Kenya, growing the right varieties and enhancing them to cooperate in order to overcome the domestic obstacles as described and actually reach their markets. By doing so ICRAF is likely to serve most small-scale farmers and according to the goals of the organisation this is what it intends to do.

7.3 Action plan

Focussing on Kenya from now on, an interesting component of the research project was the fact that in the North-Eastern regions of the country the level of mango consumption is much lower than in the rest of Kenya. Striking enough this is one of the areas where many mangos are produced, for instance in Garissa and Tana River. Apparently in particular the well represented Somalian community does hardly consume mangos since they believe the fruit causes diseases like malaria. It seems interesting for ICRAF to figure out how to reach this community and thereby creating a bigger local market for small-scale farmers from the area. There are good reasons for people to consume mangos, in particular for children because of the high containment of vitamin A (*Griesbach, 2003*). ICRAF can help to inform these people about the benefits of the fruit and stimulate the consumption of mangos.

Secondly ICRAF could be involved in research over new varieties of mangos. While many respondents indicated that they liked the variety of Apple (see the List of Graphs at the end of this report) most, it was also said that only several varieties are truly known among the Kenyan consumers. According to the collected data in particular sweeter and bigger mangos will be favoured by many consumers. It is advisable to assist in the selection of new suitable varieties for local markets. In the future pilot projects could be set up in order to test the amount of interest for new varieties.

Furthermore it is interesting that most respondents indicated they only consume mangos in the form of fruits. One would expect, in particular when consuming as many mangos as most Kenyans indicated to do, that other applications were more practiced as well. In particular fruit juices – there is even a pure mango juice produced in the Coastal area – perhaps mark interesting future markets. It should be mentioned however that this subject deserves more effort in terms of study first, since juices were not explicitly dealt with in this study.

Another interesting point derived from the research deals with cooperation. In other studies several cooperations have been mentioned (*Zeila, 2005 ; Dijkstra, 1996*), reporting mixed results so far. When observing the initiatives and keeping in mind the practical problems in terms of in particular logistics and finance, the gains of cooperating seem to outweigh the costs. In particular small-scale farmers often are not selling their grown produce because of infrastructural difficulties amongst others. They are then left in the hands of middlemen, who exploit this situation, knowing the farmers are not selling their produce anywhere else. When

this happens regularly, one can only imagine the de-motivating effects this can have. When cooperating with other local farmers the yield of the grown mangos will only grow, thereby enlarging market potential in the future and with the note that risks are shared instead of carried alone. ICRAF should therefore encourage in particular these small-scale farmers to cooperate by emphasising the benefits that this can have on the long term. By taking out middlemen from the production chain the farmers are likely to benefit more from their efforts and furthermore can share risks in case of drawbacks. ICRAF can assist in this process by informing and training these farmers to cooperate in order to guarantee a stronger position in the market.

8. CONCLUSIONS

8.1 Conclusions

The problem formulation of this report questioned how consumers in both the Netherlands and Kenya would perceive quality in the mango market and what strategy would be appropriate for ICRAF to make local farmers more competitive.

When formulating concluding remarks on the Dutch market one can only be moderately positive. Although respondents were not outspokenly negative on the different features of the mango as formulated, the Dutch market can not be labelled as 'potential' without additives. First of all consumption rates of the Dutch consumers are low, with 69,3% of the respondents eating mangos only five times per year or less. This is striking since most respondents appeared to be rather positive about the fruit. That is why it should be concluded that there are other reasons why people do not eat the fruit regularly. One could argue that despite the growing popularity of exotic fruits in most European countries, some are apparently still not as common as for instance the banana. It would be interesting to figure out why this is and moreover, how to encourage the usage of mangos.

It could also be suggested that there might be chances for Kenyan farmers in the sphere of fruit juices concerning the Dutch market. Fruit juices are among the most imported products in the Netherlands (*FAO, 2005*) and although mango juices are not specified through this bureau of statistics, one look in any supermarket could tell that mango juice is well represented amid this number. Since only one company in Kenya so far is making mango juice for the local market – called Picana, which is made near Mombasa – there might be options for trade in terms of juice, both in domestic and international trade. Perhaps investors from the European Union could be sought to finance such a project.

The export of the fruit itself was next to consumer issues debated for several reasons. There seem to be many obstacles when wishing to export fruits out of Kenya to the European Union, which is confirmed by the rise of exports to Arabian countries and the enormous decline of mango exports to countries of the European Union: only 4% of the Kenyan yield is exported and of that percentage 85% goes to Arabian nations (*HCDA, 2005*). The main reason for this trend are the high quality standards of the European Union, which are simply not realistic for most Kenyan farmers at this moment. Another major concern of the Kenyan farmers, even when considering domestic trade, are the poor conditions of roads and transport facilities. Combining these devastating logistical conditions with the perishability of the mangos, makes it a risky operation already to transport produce to markets only few hundred kilometres away, not to speak of international markets. All in all one should conclude that mango trade in the international arena by Kenyan farmers is at this moment not realistic and therefore ICRAF should emphasise operating on local markets.

The results of the research in Kenya suggest that there are enough challenges and possibilities on these markets. First it was argued that a share of the population in particularly the North-Eastern part of the nation do not eat mangos because of cultural beliefs or myths. Some of the respondents indicated they knew themselves that these myths might not be completely true,

but on the other hand these stories are not myths for no reason. It would be interesting to figure out how these people can be informed and perhaps stimulated to consume mangos. It might sound harsh that people should be convinced for – as might appear at a first glance – marketing goals, but there is slightly more to it. In African nations on yearly basis ten thousands of children die because of a deficit of vitamin A, of which mangos contain plenty. If not to convince parents to start eating the fruit, then at least convincing them to feed their children would be advisable.

The second issue arising from the collected data was introduced by the preferences of the respondents. It was found that in particular regular and heavy users of mangos in Kenya would like there mango to be sweeter as they use to be. Furthermore especially the non-users of mangos indicated they would like their mangos to be bigger than they knew them. Results like these lead to the conclusion that there are options to create new markets or conquer parts of existing markets by introducing new varieties. It was argued that since ICRAF specialises in agroforestrial research, perhaps farmers that are assisted and helped by ICRAF could profit from this knowledge and the consumer preferences as expressed in this research.

Finally the subject of cooperation among farmers was discussed. It was debated that although many farmers do not seem to show major interest in cooperating with colleague farmers and projects so far to establish cooperation ended having mixed results, these people should be convinced that cooperation is advisable. Not only are they sure to get a better price for their produce once they bring it to the markets themselves, but in addition risks and costs can be shared and problems be solved. One could think of transportation problems, which could be tackled at least partly when investing in communal means of transportation. Also growing different crops among a group of farmers could be considered to spread risks in case of failed harvest. Furthermore expensive investments in fighting diseases could be shared, enlarging the chances of a successful harvest.

In short, ICRAF has been advised to focus on local markets since most small-scale farmers are likely to profit from those efforts. In addition the results of the Dutch research indicated that this particular market is not interesting per definition. Kenyans on the other hand are notable mango consumers and there seem to be options left in local markets. Together with the difficulties that have been discussed intensively it would be wise to focus on local markets and make international trade a long term goal. If small-scale farmers are better organised and domestic difficulties can be overcome more effectively, in the end these farmers will be better prepared to enter the highly competitive international market for mangos.

8.2 Reflection

Results vs. objectives

The objective of this research as formulated in the first chapter has been reached in a general sense. This study tried to determine what factors influence consumers' buying behaviour and the results provide some interesting suggestions. In addition the aim was to develop a strategy in order to help ICRAF by making local farmers more competitive. Although the results suggested that the international ambitions should be put on the long term, the developed strategy aims at improving living standards of small-scale farmers by focussing on local

markets by enhancing cooperation and introducing new varieties of mangos. In addition some groups of the Kenyan population could be informed about the benefits of mangos, thereby creating new local markets next to the existing ones.

In terms of relevance for ICRAF, one could argue the research has been relevant as well, since no actions have been undertaken in the past to accentuate the reasons behind consumers' behaviour. Most studies of ICRAF are oriented on an agricultural basis and therefore do not put much emphasis on consumers' buying behaviour. From that perspective this research therefore seems relevant. On the other hand, one could debate the relevance of the thesis for small-scale local farmers, whose concerns and difficulties are the very reason for this project and who in a way also stand at the cradle of research institutes and organisations such as the World Agroforestry Centre. Closest to the truth it is probably not possible to typify the relevance of this research project for these individuals. The question remains whether this is necessary. If only some of the suggestions are picked up and make any difference for a number of these farmers, the relevance would be granted.

Process

The making of the thesis has been a time consuming and sometimes frustrating process. The best part obviously was the research part in Kenya, where actual field work was carried out and most information for this thesis was collected. In comparison the Dutch research was quite dull and therefore somewhat disappointing. The terminology 'frustrating' refers to the long process of writing after the data collection took place. The intention was to finish the report within a few weeks after returning to the Netherlands, but reality proved do be quite different from the intentions.

One of the weaker points of this research might be the somewhat thin methodological basis. It is argued that the models used are very relevant for the research project and therefore the lack of extended methodology is covered properly. The model of Perceived Quality is designed particularly for food studies, and therefore is highly relevant and appropriate for this study. On the other hand one could argue that scientific research could deserve a more solid methodological base or funding.

In addition some critical notes should be made about the questionnaire. First of all it is not scientifically strong to work with different scales in the different areas. It was argued by scientists of ICRAF that seven options to choose from would create too much confusion among Kenyan respondents, and therefore the initially used 7-point scale was replaced by a 5-point scale. Although this was practically the most logical solution, it does not make the comparison between Kenya and the Netherlands an easy job. One could even argue that this comparison is, because of the different scales, not justified. There are however more reasons for this. First of all, in both researches different methods of data collection were used. Although both groups of respondents had to work with questionnaires with (nearly) similar content, they were approached in a completely dissimilar way. The Dutch respondents were asked to reply by post, giving them all the responsibility and leaving no room for any control over the process. The Kenyan respondents were asked individually to fill in the questionnaires, sometimes notably by a Dutch interviewer. Secondly the Kenyan questionnaire was written in English, which could lead to doubts as well. Although English is after Swahili an official language in Kenya, it must be admitted that it is not the mother

tongue of many Kenyans. ICRAF scientists indicated this should not be a problem, but during the field work sometimes it seemed respondents had difficulties with the language used in the questionnaire.

The World Agroforestry Centre has been of great help throughout the process. Within three months the research process was taken care of, visiting four major regions of Kenya and interviewing over 250 people. In short, nothing but positive comments on the operational level. The only possible improvement is extension of the time frame of the research with a month in future projects, since now not many failures could be made to bring the time frame into trouble. The goals as formulated by ICRAF however – reducing poverty, increasing food security and improving the environment – are an interesting topic for discussion. Of course these goals are admirable, but might they also – at least partly – be contradictory? How many of the measures that have been taken in developing countries to reduce poverty and to increase food security have had a devastating effect on the environment? Can you actually develop countries like Kenya, increasing the welfare of individual citizens without harming the environment? Many developing countries seem to have used wrong strategies, or at least have not been able to unite both goals.

8.3 Recommendations

Since not many studies of ICRAF have focused on consumer preferences or behaviour so far, it would be advisable to continue the initial steps taken by means of this study. It is not claimed that knowledge about consumers is a panacea, but it should be an integral part of an overarching strategy to achieve the goals of the organisation. Focussing solely on agroforestrial matters could leave opportunities unused to the disadvantage of small-scale farmers. This study provides some interesting starting points for further research.

Considering the difficult conditions in which Kenyan farmers produce mangos and market them, it seems advisable to focus on the local markets first in order to strengthen market positions and expand knowledge. In addition, considering the Kenyan data, it should be analysed whether Kenyan women indeed eat more mangos than males do. Second, it could be interesting to find more information about applications of mangos in consumption patterns. Furthermore it is interesting that in North-Eastern Kenya an impressive share of the population indicated not to eat mangos since the are believed to cause diseases. In respect to the characteristics of the fruit, some suggestions were put forward as well. Some consumers indicated they would prefer a sweeter variety of mangos if possible, while also bigger mangos supposedly could count on big support among Kenyan consumers.

Secondly concerning the used methodology and more in terms of general research objectives, it would be advisable to conduct studies in order to extend the model and framework on food studies. Although the used methodology has served its purposes with flying colours in this research project, it should be mentioned that the model is around fifteen years of age by now and perhaps improvements could be made.

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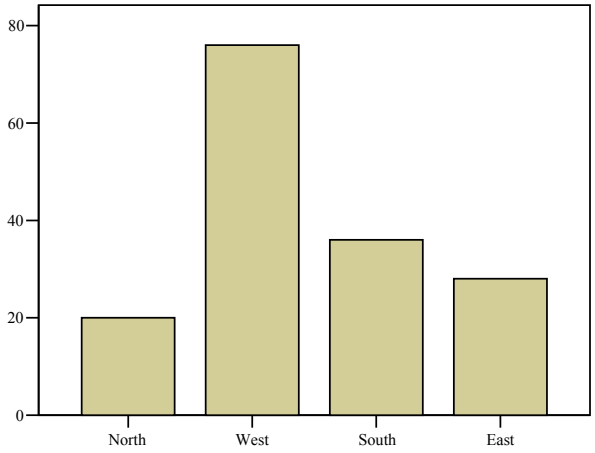
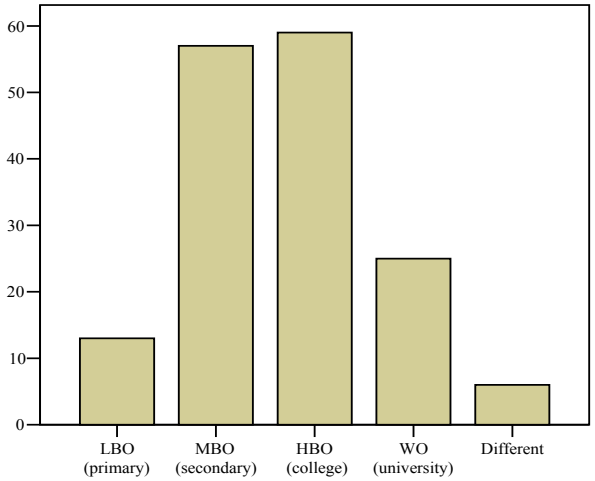
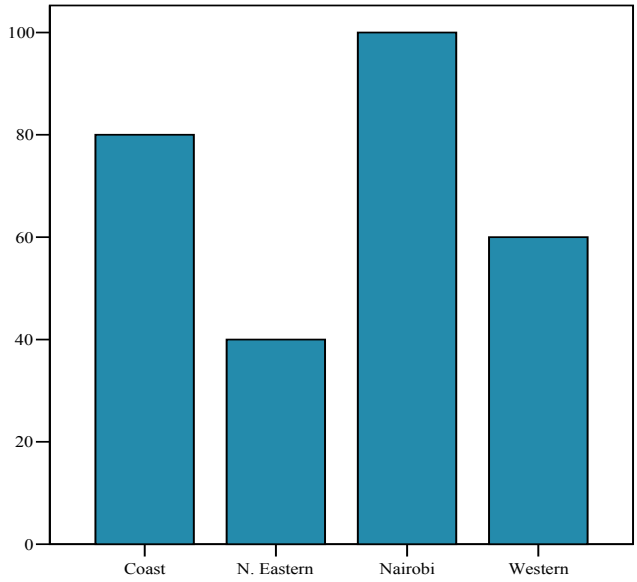


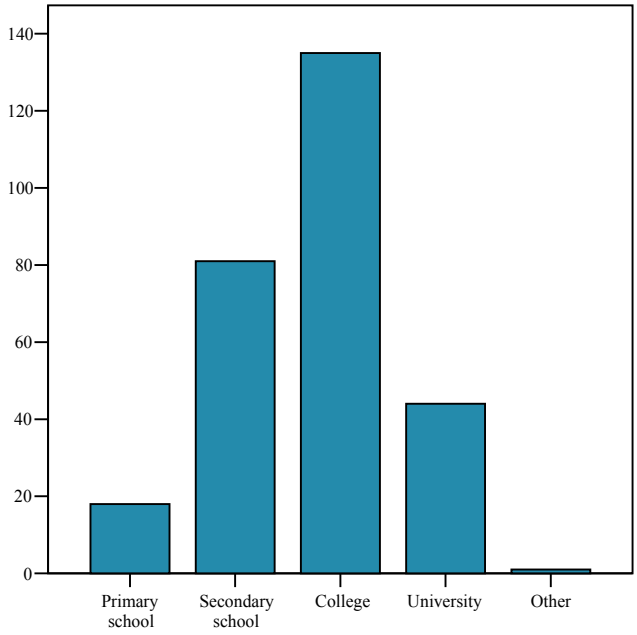
Graph 3. Regional deviance of the Dutch respondents



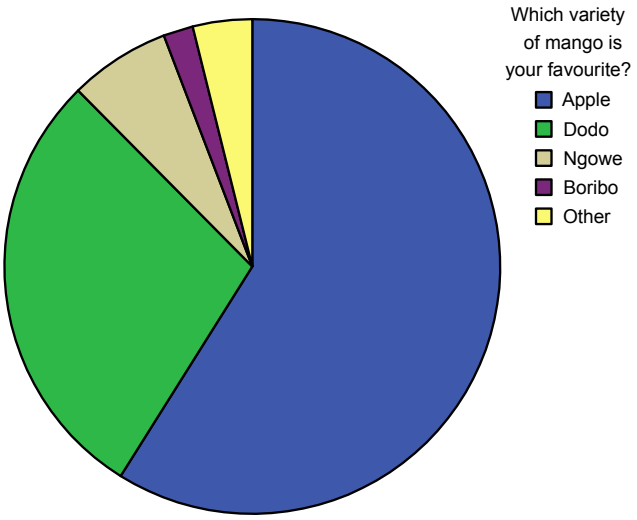
Graph 4. Level of education of the Dutch respondents



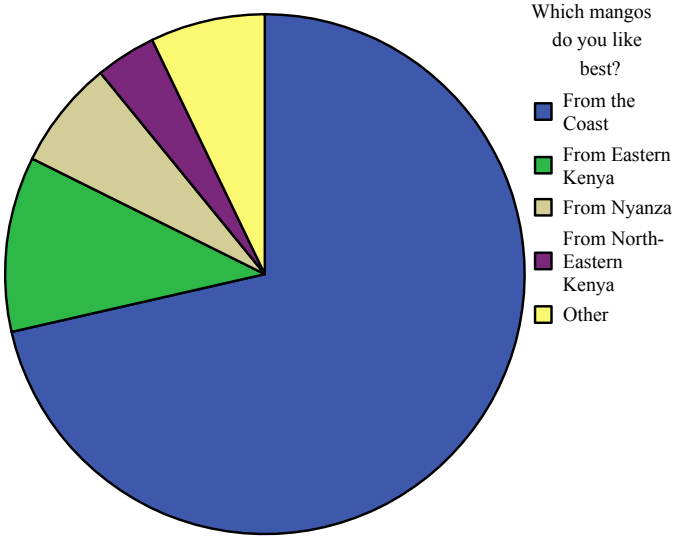
Graph 5. Regional deviance of the Kenyan respondents



Graph 6. Level of education of the Kenyan respondents



Graph 7. Favourite varieties of mangos in Kenya



Graph 8. Favourite regions of mangos in Kenya

APPENDIX 1 – Questionnaire that was used in the Netherlands

Geachte heer/mevrouw,

Mijn naam is Tim Boersma en ik ben student aan de Universiteit Twente in Enschede. Voor mijn afstuderen voer ik een opdracht uit voor het ICRAF, een organisatie die zich bezighoudt met het ondersteunen van boeren in ontwikkelingslanden. Doel hiervan is dat deze boeren een rooskleuriger toekomst tegemoet gaan dan zij nu vaak doen.

Het onderzoek dat ik ga uitvoeren spitst zich toe op consumentengedrag op het gebied van mango's. In overleg met ICRAF is besloten ons toe te leggen op de Nederlandse markt en de Keniaanse markt, het land waar het hoofdkantoor van ICRAF is gevestigd. Om een beeld te krijgen van de Nederlandse markt is een steekproef van 1000 mensen genomen, waarvan u er dus een bent.

Voor u ligt een korte vragenlijst over mango's. Om iets zinnigs te kunnen zeggen over de Nederlandse markt op het gebied van mango's, heb ik een aantal gegevens nodig. Daarbij heb ik dus uw hulp hard nodig! Bovendien bewijst u wellicht uzelf een dienst, want onder de mensen die de vragenlijsten terugsturen worden drie waardebonnen ter waarde van 20 euro verloot. Ik hoop dat u kort de tijd wilt nemen (langer dan 10 minuten kan het invullen niet duren) en wens u veel succes bij het invullen van de vragen. U kunt de vragenlijst gratis terugsturen door middel van het antwoordnummer op de laatste pagina. Als u de vragen heeft ingevuld volgen hiervoor instructies. Bij voorbaat dank voor uw tijd en moeite.

Met vriendelijke groet,

Tim Boersma

Allereerst zou ik graag wat algemene gegevens van u te weten komen. Voor de duidelijkheid, alle vragen van de vragenlijst zullen vertrouwelijk worden behandeld. In het geval van meerkeuzevragen kunt u het juiste antwoord aankruisen. In het geval u een stelling voorgelegd wordt kunt u aangeven in hoeverre u het met de stelling eens of oneens bent door een getal op de schaal te omcirkelen. Veel succes!

1. Uw leeftijd is ……

2. Uw geslacht is ……..

3. U bent woonachtig in de regio:
   - ☐ Noord (Friesland, Groningen, Drenthe en Flevoland)
   - ☐ West (Noord-Holland, Zuid-Holland en Utrecht)
   - ☐ Zuid (Noord-Brabant, Limburg en Zeeland)
   - ☐ Oost (Overijssel en Gelderland)

3. Uw thuissituatie is:
   - ☐ Alleenstaand
   - ☐ Samenwonend
   - ☐ Gezin
   - ☐ Anders, namelijk …….

4. Uw opleidingsniveau is:
   - ☐ Lager beroepsonderwijs
   - ☐ Middelbaar beroepsonderwijs
   - ☐ Hoger beroepsonderwijs
   - ☐ Wetenschappelijk onderwijs
   - ☐ Anders, namelijk ……

5. Wie doet meestal de boodschappen in uw huishouden?

   - ☐ Uzelf
   - ☐ Uw partner
   - ☐ Anders, namelijk …….

6. Hieronder staan vier plaatjes afgebeeld. Zou u aan willen geven op welk plaatje u een mango ziet afgebeeld?

a. 

b. 

c. 

d. 

7. Heeft u ooit mango's gegeten?

□ ja □ nee

In het geval u 'ja' heeft ingevuld, kunt u verder gaan met vraag 8. In het geval u voor 'nee' heeft gekozen, zou ik u willen vragen hieronder in eigen woorden te omschrijven waarom u geen mango's eet. Daarna kunt u verder gaan met het eerste deel van de vragenlijst op de volgende pagina. Alvast bedankt!

……

……

……

8. Hoe vaak eet u mango's?
   - □ Zelden of nooit
   - □ Ongeveer vijfmaal per jaar
   - □ Ongeveer tweemaal per maand
   - □ Wekelijks

9. In welk seizoen eet u voornamelijk mango's?
   - □ Winter
   - □ Lente
   - □ Zomer
   - □ Herfst
   - □ Het hele jaar door

10. Als u mango's koopt, waar gebruikt u ze dan voor?
   - □ In fruitsalade
   - □ Bij het koken
   - □ Gewoon als fruit
   - □ Anders, namelijk ……..

Deel 1

In dit eerste deel van de vragenlijst draait het om motieven die een rol kunnen hebben gespeeld (of nog spelen) bij het kopen van een mango. U kunt wederom op de schaal aangeven in hoeverre u het met de stellingen eens bent of oneens. Na de vier vragen kunt u open commentaar geven op de vragen als u wilt.

1. Mijn eerste mango at ik omdat ik nieuwsgierig was.

Helemaal mee oneens						Helemaal mee eens
1	2	3	4	5	6	7

2. De prijs van de mango is voor mij erg belangrijk bij het winkelen.

Helemaal mee oneens						Helemaal mee eens
1	2	3	4	5	6	7

3. Ik eet zelden een mango, omdat ik het daarvoor te apart vind.

Helemaal mee oneens						Helemaal mee eens
1	2	3	4	5	6	7

4. Ik koop een mango alleen als ik hem in de winkel tegenkom en er op dat moment zin in heb.

Helemaal mee oneens						Helemaal mee eens
1	2	3	4	5	6	7

Open commentaar:

……

Deel 2

In dit tweede deel gaan de vragen over de mango als product. De eerste vragen die nu volgen gaan over producteigenschappen van de mango. Zou u aan kunnen geven in hoeverre u het met de stellingen eens of oneens bent?

1. Ik vind de mango een mooie vrucht.

Helemaal mee oneens 1 2 3 4 5 6 7 Helemaal mee eens

2. De kleuren van de mango ogen fris.

Helemaal mee oneens 1 2 3 4 5 6 7 Helemaal mee eens

3. Ik zou het fijn vinden als de mango wat kleiner zou zijn.

Helemaal mee oneens 1 2 3 4 5 6 7 Helemaal mee eens

4. Ik vind het helemaal niet belangrijk hoe de mango eruit ziet.

Helemaal mee oneens 1 2 3 4 5 6 7 Helemaal mee eens

5. Ik vind de mango in verhouding tot andere vruchten duur.

Helemaal mee oneens 1 2 3 4 5 6 7 Helemaal mee eens

6. Ik kijk wel eens waar de mango vandaan komt.

Helemaal mee oneens 1 2 3 4 5 6 7 Helemaal mee eens

7. Er zit verschil in de kwaliteit van mango's in de supermarkt en die bij de groenteboer.

Helemaal mee oneens 1 2 3 4 5 6 7 Helemaal mee eens

8. Ik maak me zorgen om de arbeidsomstandigheden waaronder een mango wordt geplukt en verwerkt.

Helemaal mee oneens 1 2 3 4 5 6 7 Helemaal mee eens

Een mango kan er nog zo mooi of lelijk uitzien, uiteindelijk lijkt de ervaring van het eten van de mango het belangrijkst te zijn in de beoordeling van het product. De volgende stellingen gaan over het eten van mango's. Wilt u aangeven in hoeverre u het met de stellingen eens of oneens bent?

1. Ik vind dat de mango een lekkere smaak heeft.

Helemaal mee oneens 1 2 3 4 5 6 7 Helemaal mee eens

2. Een mango zou van mij wel wat zoeter mogen zijn.

Helemaal mee oneens 1 2 3 4 5 6 7 Helemaal mee eens

3. Een mango is eenvoudig te schillen.

Helemaal mee oneens 1 2 3 4 5 6 7 Helemaal mee eens

4. Ik kan eenvoudig beoordelen of een mango rijp is.

Helemaal mee oneens 1 2 3 4 5 6 7 Helemaal mee eens

5. Ik vind de draadjes in het vruchtvlees van de mango vervelend.

Helemaal mee oneens 1 2 3 4 5 6 7 Helemaal mee eens

6. Het is lastig dat een mango meestal nog enige dagen moet rijpen voordat ik kan gaan eten.

Helemaal mee oneens 1 2 3 4 5 6 7 Helemaal mee eens

7. Als ik vieze handen krijg bij het schillen van een mango vind ik dat niet zo erg.

Helemaal mee oneens 1 2 3 4 5 6 7 Helemaal mee eens

Tot slot zijn er ook eigenschappen die met een product te maken kunnen hebben. Eigenlijk weten we als consument alleen niet altijd precies of zo'n eigenschap wel echt bij het product hoort. Hierover gaan de laatste vragen van deze vragenlijst.

8. Ik ben er van overtuigd dat mango's gezond zijn.

Helemaal mee oneens 1 2 3 4 5 6 7 Helemaal mee eens

9. Er zitten veel vitamines in mango's.

Helemaal mee oneens						Helemaal mee eens
1	2	3	4	5	6	7

10. Ik denk dat er bij mango's weinig bestrijdingsmiddelen worden gebruikt.

Helemaal mee oneens						Helemaal mee eens
1	2	3	4	5	6	7

11. Het telen van mango's leidt niet tot uitputting van de landbouwgrond.

Helemaal mee oneens						Helemaal mee eens
1	2	3	4	5	6	7

12. Ik vind dat een mango een exclusief product is.

Helemaal mee oneens						Helemaal mee eens
1	2	3	4	5	6	7

13. Ik vind het belangrijk dat de mensen die de mango's produceren dit onder goede arbeidsomstandigheden doen.

Helemaal mee oneens						Helemaal mee eens
1	2	3	4	5	6	7

En zie daar, u bent klaar met het invullen van de vragenlijst! Ik hoop dat u het leuk vond om de vragen in te vullen. Als u de gegevens terug wilt sturen en bovendien kans wilt maken op een van de drie waardecheques ter waarde van 20 euro, kunt u uw adresgegevens invullen op de eerste pagina van deze brief. Deze gegevens worden vanzelfsprekend vertrouwelijk behandeld en niet doorgegeven aan derden. Natuurlijk kunt u de vragenlijst ook terug sturen zonder deze gegevens in te vullen.

Op de laatste pagina van deze vragenlijst staat een antwoordnummer van de Universiteit Twente. Zorgt u dat alle pagina's op volgorde liggen en dat het antwoordnummer aan de achterkant goed zichtbaar is. Als u de pagina's dubbel vouwt en er een nietje doorheen wilt doen, maakt u zo eenvoudig een brief op gangbaar formaat. U mag de formulieren natuurlijk ook in een envelop doen en daarop het antwoordnummer schrijven. Een postzegel is niet nodig.

Nogmaals veel dank voor uw tijd en moeite!

Met vriendelijke groet,

Tim Boersma

Postzegel niet nodig

Universiteit Twente / CW (faculteit GW)

o.v.v. Onderzoek T. B.

Antwoordnummer 323

7500 VB Enschede

APPENDIX 2 – Questionnaire that was used in Kenya

Dear Sir / Madam,

My name is Tim Boersma and I am a student from the Netherlands. I am doing research for ICRAF, an agricultural research organisation based in Nairobi. Among other things ICRAF is helping farmers to develop a market for indigenous fruit trees. ICRAF builds on indigenous knowledge concerning the characteristics of the fruits mostly collected and sold by women on the roadside and in domestic markets.

This research tries to specify consumer behaviour in the field of mangos amongst the people of Kenya. To get a good picture of the Kenyan consumer preferences, we aim at interviewing 350 people, of which you are one. The purpose of this research is to help inform the marketing strategies for mangos to ascertain optimal productivity for small-scale farmers.

In the next pages you will find a short questionnaire concerning mangos. Firstly, there are some questions on basic information such as your age and gender. Most questions will obviously concern mangos. Hopefully, you can spare 5 minutes to complete this questionnaire. Your help is necessary and will be very much appreciated!

This page contains questions about general information. If there are more options (answers) to one question, please mark the one that applies to you the most. In case a proposition is presented, please indicate on the scale how much you disagree or agree with the proposition. Good luck!

1. Your age is ……

2. Your gender is ……..

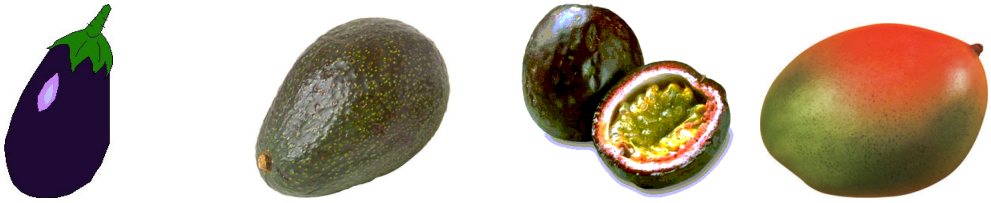
3. Your level of education is:
   - ☐ Primary school
   - ☐ Secondary school
   - ☐ College
   - ☐ University
   - ☐ Other (please specify):

4. Who usually does the shopping in your household?

   - ☐ You
   - ☐ Your partner
   - ☐ Someone else (please specify):

5. Below you see four pictures. Could you please circle the letter under which you see the mango?

a. b. c. d.



6. Have you ever eaten a mango?

   ☐ yes ☐ no

   If you have chosen yes, please continue with question number 7. In case you chose the answer no, please describe briefly why you have not eaten mangos. Then you can continue with the first part of the questionnaire.

   ……

7. How often do you eat mangos?
   - Seldom
   - About 5 times per year
   - About twice per month
   - Weekly
   - Daily

8. In what season do you eat most mangos?
   - Winter (June – August)
   - Spring (September – December)
   - Summer (January – March)
   - Fall (April – May)
   - All year round

9. When you buy mangos, what do you use them for?
   - As fruit salads
   - For Cooking
   - Just to eat as fruit
   - Other (please specify):

10. Which mangos do you like best?
   - From the Coast
   - From Eastern Kenya
   - From Nyanza
   - From North Eastern Kenya
   - Other (please specify):

11. Which variety of mango is your favourite?
   - Apple
   - Dodo
   - Ngowe
   - Boribo
   - Other (please specify):

Part 1

This first part of the questionnaire deals with motives that might apply when you buy mangos. Please use the scale to indicate whether you agree or disagree with the proposition.

1. I ate my first mango out of curiosity.

Completely disagree	Disagree	Don't know	Agree	Completely agree

2. When shopping the price of mango is very important to me.

Completely disagree Disagree Don't know Agree Completely agree

3. I seldom eat mangos, because I think they are too special (elite food).

Completely disagree Disagree Don't know Agree Completely agree

4. I only buy mangos when I run into them and feel like eating them.

Completely disagree Disagree Don't know Agree Completely agree

Part 2

The second part of the questionnaire deals with questions about mango as a product. Characteristics of mangos are discussed in other words. Could you please indicate whether you disagree or agree?

1. I think mango is a beautiful fruit.

Completely disagree Disagree Don't know Agree Completely agree

2. The colours of mango seem fresh.

Completely disagree Disagree Don't know Agree Completely agree

3. I would be happy if the mango fruit was smaller.

Completely disagree Disagree Don't know Agree Completely agree

4. I think it is important what a mango looks like.

Completely disagree Disagree Don't know Agree Completely agree

5. I think mango is expensive compared to other fruits.

Completely disagree Disagree Don't know Agree Completely agree

6. I am usually interested from which region a mango comes.

Completely disagree Disagree Don't know Agree Completely agree

7. I am worried about the labour conditions in which mangos are picked and processed.

Completely disagree Disagree Don't know Agree Completely agree

A mango can be ugly or beautiful, in the end the experience when eating the mango is probably most important. The next propositions are about this experience. Please use the scale again to fill in your answers.

1. I think that mango has a good taste.

Completely disagree Disagree Don't know Agree Completely agree

2. I would like my mango to be sweeter.

Completely disagree Disagree Don't know Agree Completely agree

3. A mango is easy to peel.

Completely disagree Disagree Don't know Agree Completely agree

4. I can determine easily whether a mango is ripe.

Completely disagree Disagree Don't know Agree Completely agree

5. I think the fibres in the pulp of mangos are nasty.

Completely disagree Disagree Don't know Agree Completely agree

6. I do not like it when a mango needs a few days to ripen before I can eat it.

Completely disagree Disagree Don't know Agree Completely agree

7. I do not think it is a problem when my hands get dirty while peeling a mango.

Completely disagree Disagree Don't know Agree Completely agree

Finally there are characteristics of a product of which we as consumers never really know whether they actually belong to the product. The final questions deal with these characteristics.

8. I am convinced that mangos are healthy to eat.

Completely disagree Disagree Don't know Agree Completely agree

9. There are many vitamins in mangos.

Completely disagree Disagree Don't know Agree Completely agree

10. I think that not many pesticides are used on mangos.

Completely disagree Disagree Don't know Agree Completely agree

11. The growing of mango does not exhaust the soil.

Completely disagree Disagree Don't know Agree Completely agree

12. I think mango is an exclusive product (for elite consumers).

Completely disagree Disagree Don't know Agree Completely agree

13. I think it is important that people who produce mangos do this under proper working conditions.

Completely disagree Disagree Don't know Agree Completely agree

And there you go, all the questions completed! I hope you enjoyed completing the questionnaire. Anyhow I would like to thank you once more for your time and effort!