

Report on the high segment market pilot in Kenya - 2008

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Afrivég



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AfriVeg project

Development of commercial field vegetable production, distribution and marketing for the East African market

Project goals and purpose

Goal

The goal of the project is to contribute to a vital rural economy of Tanzania and Kenya through the development of effective and integrated field vegetable chains for the domestic and regional market in East Africa by:

- participatory development and implementation of innovative, economic feasible and sustainable production methods in line with market demands,
- empowerment of public institutions to sustain the foregoing and
- generate policy relevant information and recommendations.

Purpose

The purpose of the project is to support the development of a restricted number of pilot product-market chains with a high market potential in close co-operation with relevant private and public actors as well as generating and dissemination relevant information for the development of the regional vegetable market in East Africa.

The AfriVeg Programme Management

If you think you could contribute to the goals of AfriVeg in any way, please contact the Programme management.

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1 Introduction

The pilot aims to link smallholder tomato farmers in Kenya to local high segment markets as supermarkets, hotels, restaurants and hospitals.

Objectives 2008

1. Contribute to attain an effective and sustainable integration of smallholder tomato farmers in local/regional high segment markets;
2. Address observed challenges in the high-segment tomato value chain by analysing requirements, demand and institutional setting of the high segment market and the smallholder tomato farmers situation
3. Explore new chain configurations to attain effective and pro-poor tomato value chains in the high segment tomato market

Outputs 2008

1. An overview of the size, requirements, institutional setting and current supply issues of tomatoes to the Uchumi market in Nairobi and of the hotels and restaurants in Arusha (finalised in 2007); Due to the limited high segment market in Arusha it was decided to continue in Kenya only.
2. An overview of the current production yields and related management techniques including post harvest and trading aspects of the identified farmer groups (in Kenya finalised in 2007 and in Tanzania fieldwork finalised in 2007, analysis in January 2008).
3. Farmer group identified around Nairobi who is willing to participate in activities enabling them to deliver their produce to the high market segment (finalised in 2008).
4. Confrontation of output 1 with output 3 and subsequent identification of bottle-necks as a basis for development of an appropriate training (finalised in 2008).
5. Farmers training and action research focussed on identified bottle-necks (started and ongoing).

In 2008 activities in the high segment market focused on identification of a farmer group and formally organizing the group around tomato production including a contract between this group and a trader delivering his product to Uchumi supermarket in Nairobi. Also, in 2008 the first crops are being produced. In 2008 the pilot attracted a local supply chain manager, Rose Mwaniki to assist and facilitate local activities and processes.

2 Methodology

To reach the objectives stated in the introduction, action research was selected as most appropriate methodology due to its characteristics. Characteristics of a value chain action research are:

- Action research is engaged with a change process and grounded in experiential learning
- Systematic evaluation on a sound scientific basis
- Action research involves stakeholders and is of use to them
 - o Improve effectiveness of change process
 - o Influence practice, strategy and policy
- Action research is problem oriented
 - o Addresses localized problems
 - o Answers 'high level' questions of strategic importance beyond the specific case at hand

At the beginning of the pilot the high segment market has been studied in terms of its size, requirements, trends and challenges. At the same time the situation of tomato farmers was analysed to understand their problems and possibilities to supply to the high segment market.

Next step was to identify chain actors who were willing to participate in the pilot. Together with the selected and interested chain actors their challenges have been identified and prioritised. Based on these interventions were formulated. Depending on the type of intervention the interventions are being implemented individually or with other chain actors.

During all these steps it is necessary to monitor and evaluate participatory in order to analyse the process and draw lessons learned.

3 Overview high segment market and tomato production in Kenya

Kenya has a thriving horticulture sector annually producing over 1million tons of vegetables on an estimated 100,000 ha, with 90% being consumed domestically and 10% exported. Most production is carried out by small scale farmers, with approximately 0.5 -2.5 ha of land each. The main vegetable crops grown in Kenya for domestic market include kale, tomato, cabbage, African leafy vegetables and onion while French beans and peas are grown for export. The vegetable industry provides employment to many people who are engaged in production, processing, and marketing. Tomato is one of the major vegetable crops.

Tomato production is a major farming business in Kirinyaga district. Out of the average 5 acres of land, tomato occupies more than a third of the cultivated area. Furrow irrigation is common although known to favour insect and other arthropod pests besides mechanical transmission of soil-borne diseases such as the prevalent bacterial wilt. Tomato produce is usually sold in boxes of 60kg each. The average output price per 60kg box was KShs 800 during high season and KShs 2000 during low season. The average amount of tomato harvested by each farmer was 100 boxes per acre.

The knowledge of insect pests, diseases and weeds was good because farmers were able to identify and name them. However, knowledge of their management strategies was scarce and was fully dependent upon pesticides for pest control. About 40% of the interviewed farmers reported rejection of their produce by buyers. The reason for rejection was mainly due to glut leading to poor market prices (22%), pests and diseases (19%), unmarketable small sizes of fruits (12%) and others are non-preferred variety and blossom end rot. Most of the farmers (77%) did not keep any record of their production; spraying or sales of tomato while about 23% did so.

The high segment market is now a fifth of the food retail. Currently there are 209 supermarkets and 16 hypermarkets in Kenya. Uchumi and Nakumatt each have 35% of the market. Supermarkets pay the highest wholesale prices for high quality tomato at KShs 40 per kg (about 40% higher than traditional retailers), but also a stable price across the year. The tomato high segment market requirements in Kenya consist of quality, quantity and timely supply. Consumers like tomatoes that are clean and fresh with soft texture but firm and free from visible damages by pests and diseases. The tomato must have long shelf life after ripening. Consistence in quantity supplied to HSM is a critical issue the suppliers are supposed to meet. The supermarket requires large volumes per supplier.

Uchumi supermarket was incorporated in 1975 and currently has one distribution centre and 10 operational branches in Nairobi. The supermarket procures from farmers (60%) and brokers (40%). Uchumi presents orders to suppliers mainly by telephone communication. Other high segment markets competing for urban vegetable consumers include Nakumatt (with quite a different procurement system), Tuskys and Ukwala supermarkets.

Uchumi supermarket alone has a yearly turnover of 425 tons of tomatoes. This is only 1% of the total amount of tomatoes produced in Kenya. Most suppliers have big land sizes ranging from 5 to 40 acres all under tomato or intercropped with other crops. They also source from small scale farmers.

4 Chain formation process

Supermarket

Uchumi was selected as an interesting partner in the pilot as they are one of the largest supermarkets in Kenya and already have contact with research institutes such as KHDP.

During meetings in Nairobi with Jonathan Ndunda, the Fresh Procurement Manager of Uchumi, we discussed their willingness to participate in the pilot. Uchumi was enthusiastic although realised their shortcomings due to financial crisis in the past. Uchumi has contracted 3 large suppliers with whom they are servicing debts after the collapse of the chain in 2006. The participating tomato growers will therefore have to sell their produce through one of established supply chains.

Problems in the supply chain were discussed, together with ideas how to tackle them. To have a consistent supply throughout the year was stated as the most important challenge. Different packaging options than the standard wooden crates were discussed such as plastic crates of no more than 20 kg and closed trucks as transportation.

There is no written contract with the supplier, only informal agreements. Uchumi pays the suppliers every 1 to 2 weeks, at least within 14 days. The minimum supply is 2 to 3 tons/week per supplier. There is no fixed price agreement. The procurement manager sets the price, chooses the suppliers and meets the branch managers every week. The suppliers bring the produce directly to the shop. Quality details are set by the branch manager.

Trader

Uchumi sources from 3 suppliers, Maina, Lucy and Westland Greens. Both Maina and Lucy are traders but produce tomatoes themselves as well. Westland Greens is only a trader. As Maina and Lucy have good knowledge of tomato production and understand the farmers' point of view as well, they were preferred partners in the pilot as tomato traders. Maina was interested to participate in the pilot, Lucy not.

Maina buys tomatoes from farmers and assists them in financing fertilisers and pesticides. His challenge is to have larger tomato sizes, be less dependent on the weather which affects yields and to increase packaging.

Maina agrees upon the price with Uchumi which Uchumi doesn't change while being in the shop (some other supermarkets do). Grading is done by the farmers. Maina sells the large tomato sizes to Uchumi and the smaller ones to the local market.

Farmers group

The first identified farmers' group mentioned many problems like transportation, seeds, shortage of capital, increasing price of fertilisers, no outlet of low quality and no direct contract with the trader Maina. Farmers are not interested in organising transportation themselves. The farmers did not seem to be a group or willing to become a group in order to be a partner in the pilot study. Therefore, a second group was identified.

In June a group of 18 tomato farmers, 9 men and 9 women, in Kirinyaga was formed. This group of farmers was already an established group as they were jointly trained in primary health care. The farmers normally grow low quality variety of tomatoes for the local market. In order to build a strong group from its inception, a self-selection process was used. This process involves the identification of one or two interested members. These members then select other members – who in most cases will share similar interests and capacities. The process goes on until the group attains the required number. In other words, the supply chain facilitator did not actually select who is to be a member, instead, the facilitator provides the criteria for membership, then the farmers select who is to be accepted/declined to join the group. Entry and exit from the group is voluntary.

Maina agreed soon after the formation of the farmers group to enter into a supply contract with the group.

Supply chain coordinator

In 2008 the project selected a supply chain coordinator, Rose Mwaniki. She is successfully operating the following activities:

- Within the Afriveg project framework facilitate the set up of selected pilot supply chain linking retailers (markets) and their demand for high quality fresh tomato with growers. To work out the headlines of cooperation as set by the project leader and translate these into detailed delivery schedules, quality requirements.
- Ensure smooth cooperation between partners in the pilot chains and in consultation with project leader address problems arising during implementation of pilot chains.
- In consultation with researchers of WageningenUR, conduct data collection and specific basic research activities on various aspects of the functioning of pilot supply chain.
- Cooperate with researchers of Wageningen UR (Agricultural Economics Research Institute and Plant Production Institute in particular) and assist them in preparing missions, training and capacity building activities. To follow up training and research activities.
- Liaison and cooperate with researchers of Wageningen UR and other project partners regarding experimental field work on tomato; screen improvements from research on their potential value to improve supply chains (marketability) and test these under real supply chain conditions with supply chain parties involved.
- In close cooperation with Wageningen UR data collection and reporting for monitoring & evaluation of supply chain experiments and their impact.
- Linking with other relevant supply chains projects in Kenya (e.g. KHDP).

The supply chain coordinator is assisted by a field officer. Every month a report with an update on the latest activities and results is provided

Agronomist

The local supply chain coordinator identified an experienced agronomist, a manager of Syngenta chemical company operating within the project area to provide agronomy services to the farmers on safe tomato production practices.

Following the LEI team visit and subsequent report on their observations, the value chain coordinator decided to once again request KHDP to provide independent agronomy services to the tomato project. An observation had been made to the effect that having agronomy services from an agronomist attached to a specific chemical company could model the project towards benefiting that particular company. Independence in these key services was therefore recognized as a success factor for the project. A KHDP senior agronomist (a tomato crop specialist – Ms. Lydia Njuguna) in charge of Central province was found to provide support in the areas of production costing as well as advisory role in good farming and crop management practices.

Both the value chain coordinator and the KHDP specialist are of the opinion that the Syngenta agronomist can still assist the farmers (during nursery preparation, transplanting and crop management) without taking undue advantage of the project in terms of promoting his company's product. The supply chain manager will keep close watch on him to ensure that his advisory services are relevant to the project and that he does not just promote his company products.

WUR project team

WUR project team is the overall coordinator of this pilot. Within the pilot this team consists of people who share their experiences on tropical agronomy and supply chain processes. During the process of this pilot they will be of service to the whole chain, besides their research activities within this pilot and overall project.

5 Challenges in the chain

Challenges in high segment market chain

- 1) Quality
 - Poor quality tomato due to poor varieties that have short shelf life.
 - Pest and diseases, poor handling and rain damage that lead to physical losses and quality deterioration.
 - Variability in terms of sizes, colour and level of maturity, also due to lack of knowledge on crop management.
- 2) Inconsistent supply
 - Fluctuation in supply between dry and rainy seasons also results in price fluctuation.
 - Inconsistent supply of required volume due to different supply sources, pest and diseases and varying quality.
- 3) Standards and hygiene
 - Use of wooden packaging that bruises tomato instead of the polystyrene boxes.
 - Untidy tomato fruits due to chemical spray or mud.
- 4) Selection by consumers
 - Consumers have a tendency turning around tomatoes while selecting what they want.
- 5) Price fluctuations
- 6) Farmers' dependence on the middle men for trading tomatoes

Recommendations based on the above described tomato chain analysis

- 1) Quality

As identified above, quality issues have origin in variety, harvesting techniques, production techniques, grading and handling. Farmers should be trained on:

 - Variety selection
 - Pests and disease scouting and applications
 - Maturity indices
 - Grading
 - Packaging
- 2) Consistent supply
 - a. Farmers in Kirinyaga can be encouraged to increase production especially during dry season because they have enough water for irrigation. By doing so it will cushion quantity and price fluctuation.
 - b. Organise farmers to be partners of Uchumi.

A consistent supply will also reduce price fluctuations.
- 3) Standards and hygiene
 - a. Training farmers on pesticide use and timing to achieve Minimum Risk Levels (MRL). This can further be reinforced by supporting KEPHIS to carry out sample testing.
 - b. Farmers can adopt plastic packaging material weighing less instead of the wooden boxes that is prone to damage tomatoes during handling and transportation.
- 4) Create a transparent process between the farmers, middlemen and retailer

The chain should have a strong focus on quality (varieties, P&D, handling, product variability), consistent supply and standards & hygiene. KEPHIS is already focussing on standards & hygiene (packaging, cleanliness) in which Uchumi is involved as well.

A consistent supply can be better managed by growing tomatoes in net houses. However the investment risk is high. Uchumi is in favour of green- or net houses due to its high quality and different variety possibilities. Cost-benefit analysis of growing tomatoes in a greenhouse for smallholders is currently lacking. At the moment this is not considered an option due to the high investment costs and the big change that farmers need to make in their production style.

6 Interventions in the chain

After the chain formation in which the different chain stakeholders have committed their support to the pilot, agreements and interventions within the chain were discussed.

Agreed interventions in the chain to be included in the pilot:

- Organise a well functioning farmers group to have a consistent supply of tomatoes
- Support tomato production to offer good quality tomato by
 - Improving input supply to farmers
 - Training on good agricultural practices
 - Implementing a group learning process
- Setting up a contract between the farmers group and trader to have clear trade arrangements with stable prices.

6.1 Farmers group organisation

The farmers group has been registered as the Kirimukuyu Horticultural Growers. Registration of the farmers group is in Kenya a government requirement. With registration the group can associate and hold business meetings without any interference from any government department. In addition in order to sign/enter into a contractual agreement with formal market (buyers) the members must be enjoined into a recognized group. Group registration also allows for opening and operating a group bank account.

The group opened an account with a local bank – Equity Bank – in Wanguru. The choice of the bank was made by the group members themselves but was also endorsed by the buyer and supported by the local supply chain manager. All sales proceeds will be made direct into the group account after the input loan deductions. However, the account with Equity Bank will be closed due to problems with agreement on signatory to account by District Agricultural Office) and account will be opened with K-Rep.

Consequently the group treasurer will pay direct into the members' individual account or issue each of them with an in-house cheque, which the member can then present to the bank for payment. This system of payment has been made early into the project in order to protect member funds from fraud or mismanagement by the account signatories. The signatory to the account will constitute the chairperson, secretary and treasurer. All the three will be mandatory signatories for withdrawals.

The group meets once a month or more often if necessary and keeps a minutes book, treasurer ledger with financial transactions, correspondence file and a banking slip file.

The group will deduct from each member advanced loans in 4 equal instalments. Payments to members will be made through direct credit transfers to the individual farmer account or through the in-house cheques net of loan deductions.

During the project team meeting in September it was observed that the energetic group of farmers is well organised and seem to be cooperative to each other and trusting each other. Trust between farmers and trader is not yet optimal, although it was remarkable that the trader comes to visit the farmers. The farmers group realise the importance of having markets. It was furthermore observed that also these farmers don't have much power in the chain and are very much dependent on credit.

Support to the farmers' group is further organised by a management and leadership training

At the individual level, members will be required to maintain all records related to the following key areas:

- Planting – records will include: nursery preparation and transplanting dates; variety of seeds used; the inputs used – type and quantities; who transplanted the plants, cost of seeds and other inputs, etc.

- Crop management – inputs and chemicals used; frequency of use; application by whom; timing for sprays; dates for each application and target; scouting dates and reasons, etc.
- Harvesting – dates for harvesting; produce grades and quantities; grades harvested; total amount harvested, etc.
- Payments/loan repayment – total amount of loan from the buyer; total deductions per delivery; balance (net) paid out to the farmer; etc.

Regular Supply

In order to have a regular supply of tomatoes the farmers have been divided into subgroups with different planting dates. The group has been divided into 4 lots.

The first sub unit has been able to harvest tomatoes while the second sub-unit group has transplanted their crop, while the third sub-group is preparing to transplant during the first week of December 2008. The fourth and last sub-group was preparing their nursery and will be expected to establish it in the first week of December 2008.

During the combined meetings of the LEI team and the project management it was realized that the buyer had actually given sub-group 2 and 3 a different and cheaper seed which was unnecessary as its would introduce new variables to the research project. It was insisted that the buyer provides the correct seed and he did so soon after the meeting.

Sub-Group 1

The sub-group has 5 members. The tomato crop for 3 of them is good while that of the other 2 members' is considered fair. All the 5 members' blocks have experienced fungal infection, incidences of thrips and blossom endrot which could affect the production. However, a good harvest from 3 of them is expected. The 5 members were preparing to sell their first crop. Although the quantities of this first fruit is not large enough to fill in at least a crate of 60 kg each, the buyer has accepted to buy it in Kilos to ensure that the members do not have the opportunity of selling outside the project. The price for tomatoes is currently high in the local market and therefore the buyer has given a price of at least Kshs.60 per kg instead of the KShs 25 per kg as per agreement. During the month of December, 2008, the 5 members combined sold a total of 6,210 Kgs of tomatoes worth KShs 155, 250. The produce was sold in the local market (Embu) as it did not meet the required quality for Uchumi supermarket. However, the price fetched by the sub-group members averaged the price of the signed contract. The local market traders were reported happy with the produce quality

Challenges for this group are the frequent changes in the weather (rainy/dry spells even within the same week); lack of adequate finances (cash flow) to purchase and apply required (chemicals – preventive and curative) pesticides/insecticides promptly and water shortage has been a real challenge for the farmers. Nevertheless, 3 of the members have been able to tend their crop quite well and good harvest and incomes as projected are expected.

Sub-Group 2

This sub-group also has 5 members. All the members transplanted their tomato seedlings on 4th November 2008. The members have taken the business initiative seriously and are providing inputs up to the level of their individual capacity. Watering in all the blocks is being done as per plan and the crop is generally strong.

However, as with the other sub-group some infections have already been noticed in each of the 5 blocks and the farmers have been advised to carry out preventive as well as curative spraying to fight fungal infections, early bright and flower thrips. The farmers will be able to purchase the required chemicals with the loan from LEI.

Sub-Group 3

This group has a total of six members. Early January the tomato was flowering. This group is likely to perform best as they will be able to receive the chemical loans as soon as they transplant and should each member tender their crop through preventive measures as advised, we are likely to have a better harvest than the first two sub-groups.

Sub-Group 4

This last group of 6 members postponed to establish their nursery until mid January. The buyer has already provided the group with seeds, manure and required chemicals. Their loan will however be held until the transplanting season.

6.2 Production support

Input supply

Uchumi is particularly interested in the hybrid variety Eden F1 which the buyer is willing to buy from the farmers and trade with Uchumi. To start with tomato hybrid production requires quite some starting capital in order to buy the relatively expensive seed, required fertilisers and pesticides. A credit facility for inputs is considered crucial. This is largely because majority of the farmers group members have abandoned tomato production due to the related high cost. If they are to participate effectively, they must access funding that would enable them to purchase the hybrid tomato seed variety Eden F1 which is considerably more expensive than the local varieties. Second, other inputs such as fertilizers and chemicals are also way above the reach of these smallholder farmers.

The trader is willing to supply the farmers with the hybrid seed and manure on loan. This arrangement is further described in the next section. The input supply from the farmers was not enough as the farmers were unable to pay for the badly needed pesticides. The farmers group is trying to get loans from K-Rep or the Equity bank. In the meantime the farmers group received a loan from the project.

The loan from LEI will attract an interest of 10% flat (for 4 months @ 2.5% per month) which will be ploughed back to grow the loan fund. Consequently, at the end of the first season, the group would have grown the fund by KShs 28, 600 over a period of 4 months. In a period of 12 months, this would translate to 30% which is slightly above the current annual inflation rate of 29%. The loan fund will therefore be protected from depletion at this level of interest rate – assuming that the loan repayment is 100%.

Support to farmers group

Currently the quality of tomatoes can be improved by the following technological adjustments, based on the field visit in September by the project team:

1. The soil is quite dry, enough watering is important.
2. Nursery needs to be improved.
 - a. Drenching with Ridomil (metalaxyl) is not necessary as the seeds are already treated with Thiram.
 - b. At sowing drenching with Actara (thiametoxam) seems not to be effective.
 - c. Large variation in plants.
 - d. Better to have nursery further from production fields.
3. Transplantation – many plants died.
 - a. No pulling but digging.
 - b. Stage of transplanting is important, probably earlier – 3 weeks after sowing instead of current 4 weeks.
 - c. Planting distance
4. P&D.
 - a. At young stage not many diseases were visible.
 - b. Late blight was visible in neighbouring fields.
 - c. White fly is a big problem, in nursery and in production field. Drenching with White fly is a big problem, in nursery and in production field. Drenching with Thiametoxam (Actara) during sowing is not effective and another insecticide like Endosulfan or even a softer product would be better. Thiametoxam (Actara) can be applied after 15/21 days to control white fly.

- d. Many Syngenta products are used which are not always best to use.
- e. Crickets are a problem.

The farmers have been trained on good agricultural practices.

The supply chain coordinator analysed together with the farmers the costs and benefits of growing tomato with the hybrid tomato variety (see below).

Tomato cost benefit analysis

CATEGORIES	COSTING (KShs) per 0.25 acre per season
Seeds – 10 grams of Eden F1 variety	2,100
Land preparation – Clearing and ploughing – 950	1,750
Harrowing and digging – 350	
Manuring – 400	
Nursery – clearing, preparation and planting	1,000
Transplanting (labour)	450
Manure – 3 carts each at 500 ton?	1,500
DAP – 1/2 bag – 12.5 kg 17:17 N – P	1,900
CAN – 1/2 bag – 12.5 kg – top dressing 26% N	1,350
Nematicide (Neem products – preventive)	600
Foliar feeds – Easy grow	560
Pesticides/ fungicides – mainly curative	4,170
▪ Oshothine/dithane – 1kg 500	
▪ Thiofite – 1 kg – 250	
▪ Ridomil – 1 kg – 1,400	
▪ Dictor plus – 100ml – 250	
▪ Actara/Achook – 670	
▪ Others – 1,100	
Spraying – labour - 2 persons for 8 days @ 200 each	1,600
Plant support materials and labour – 2 KShs Per support for 2,000 plants – 4,000	6,000
Strings and labour: plant support – 2,000	
Irrigation – water and labour - payment for 3 months @ 3,000 a month – 9,000	13,800
Watering – labour – 4,800	
Weeding – 2 times by two people each @ 150 each	600
Harvesting – 5 people for 3 weeks @ 150 each per week	2,250
Total	39,630

ESTIMATED PRODUCTION VOLUMES	ESTIMATED SALES VALUE (KShs)
1. No. of crates per ¼ acre – 60	
2. Kgs per crate – 60	
3. Total Kgs for one season 3,600kgs.	
4. 80% (53 crates) - Sold to Uchumi @ KShs 1,500 per crate	79,500
5. 20% (14 crates) - Sold to the local market @ KShs 500 per crate	7,000
Gross sales	86,500
Less: Production/harvesting cost	39,630
Net Sales (before loan deductions)	48,137
Loan deductions (loan principal only)	20,000
Net income to the individual farmer	28,137

The group learning process started through experience sharing. Crop management sheets and guidance in further group learning will be implemented early 2009.

6.3 Contract between farmers group and trader

The supply chain facilitator managed the process of discussing the agreements and the final contract between the group of farmers and the trader. During this process, of several meetings in four months, issues were raised on for example the quantity and quality of produce, prices, input supply, harvesting practices, grading, packaging, delivery and payment terms. As the process of these agreements is of methodological interest they have been described in more detail below.

Quantity and quality

Each farmer will cultivate a quarter acre of land. The expected production from this size of acreage is estimated at 150 crates each weighing 65 kilos. Each farmer will therefore produce approximately 9.7 tonnes per season. A bit later the partners realised that the yield expectation was too high and adjusted it to 60 crates each weighing 60 kilo. Each farmer will therefore produce approximately 3.6 tonnes per season.

Already early during the discussion the buyer promised to buy all the tomatoes produced by the project farmers. The trader purchases the entire crop to minimize the chance of side selling – selling tomatoes to other buyers or from other farmers. Side selling is furthermore avoided by making weekly estimates of expected yields and in the first periods the supply chain facilitator will monitor the production and harvesting very closely. The farmers group is currently the only group that is planting a high breed tomato variety, Eden unknown to majority of smallholder farmers within the area. It is not easy for farmers to plant this variety as most need in-kind credit service to them.

As much as possible the buyer will buy all produce by the research group farmers. Grades 1-4 will be sold in the high segment market – Uchumi, while any balance would be bought by the buyer and sold in the local market. However in situation where the produce is completely rejected, the buyer will allow the farmers to sell the produce at the local market.

Produce collection and transport

Each participating farmer will be responsible for harvesting and managing their produce before collection by the buyer. The buyer will collect the produce at specific collection centres. Initially the centres will be located at some farmers' homes but later independent collection centres will be set up. Farmers within close proximity to any given collection point, will be required to deliver the produce for collection as appropriate.

The farmers are expected to inspect and grade their own produce. Members will be trained on how to grade and pack their produce by the buyer. The buyer will however inspect the graded produce himself as well during collection at the various collection centres.

Price of produce

Quite in the beginning of the discussions the buyer already provided a fixed price of KShs 1, 500 (Euros 17) for a 60kg crate. This translates to KShs 25 per kilogram which was regarded by the farmers and the local supply chain facilitator a good price by all standards. The trader will pay farmers at this rate but with a possibility of adjusting the prices upwards when the produce is low and prices from Uchumi are higher.

A month later the price was a bit more detailed as it was specified for the grades 1 to 4 accepted for Uchumi. The other grades will be sold to the buyer at the ongoing local market rates. Local prices will vary and will therefore be agreed upon between the buyer and the group as appropriate.

Finally the farmers were asked by the local supply chain facilitator to keep monitoring the tomato prices to enable themselves to negotiate for the prices upward. Should the prices drop however, the farmers will not be affected – the buyer will not pay them lower than the price per crate as agreed.

Packaging

It was first agreed that the farmer will provide their own packaging materials. However, specifications on materials to use and size would be given by the buyer to ensure quality and a standardized quantity per crate from each producer. Without much discussion in the end it was agreed upon that for this first season, the buyer will provide the members with the packaging materials at no cost at all. This will also enable the participating members to use a standardized crate of 60kgs each.

Payment terms and mechanism

The buyer will make payments to the group after the input loan repayment deduction. Group funds will be paid through a bank account.

Seed and other inputs

At the start of the negotiations the buyer has in principal agreed to provide the participating farmers with inputs on credit arrangements. The loan repayment deductions will be made upfront and any balance made to the supplying farmer. The input loans will mainly be in-kind and include: quality seeds, fertilizers, and chemicals (both preventive and curative). The credit will however be provided to the members who are unable to meet the production cost of tomato farming. Those members with a capacity to meet the production costs will be expected to benefit from the market linkage service only. Later in the discussion process the buyer declared that he can make a commitment to provide credit facilities (in-kind) of high breed seeds (Eden F1) and manure not exceeding KShs 3, 200 (EUR 40) per farmer which translate to a total of KShs 70,400 (EUR 726) for the entire group.

In the end the buyer confirmed that he will continue to provide high breed seeds of Eden F1 and manure on credit basis. He will however not charge the farmers any interest for this credit.

General

The farmer group and the buyer agreed to sign a one year contract – with 3 tomato production seasons. However due to the way the group has been sub-divided and organized, the tomato farmer group will be able to maintain a constant supply throughout the year. The steady supply will also be enhanced by the availability of irrigation water within the area. The contract will be reviewed after every production season depending on compliance or non-compliance of the contractual requirements by either or both parties.

The tomato produce supply contract will be signed by the group officials (chairperson, secretary and treasurer) on the one hand; and the buyer on the other. However, in order to ensure that each member is jointly and severally liable to the contract, all members will sign a protocol of signatures that is to be attached to the supply contract.

The annex shows the contract between the trader and the farmers group signed at the end of December 2008

7 Monitoring and Evaluation

Throughout the year the process of chain formation and working on the interventions to improve the supply chain of tomatoes from smallholders to the high segment market has been monitored. The conclusions of the monitoring in 2008 are:

- Chain actors are prepared to participate in a pilot project.
- There are common challenges among chain partners.
- The supermarket is not willing yet to invest in its supply chain.
- Combination of technical and organisational innovations seems to be beneficial to improve the whole chain.
- Communication among partners is crucial.

Specific monitoring of the process between the farmers group and the trader on making their arrangements resulted in the following remarks:

- In the contract neither amount of manure nor specification of seed type is written which the buyer will provide to the farmers group.
- The tomato variety has not been specified as a requirement in order to be able to sell to the trader.
- It is remarkable that the farmers and the trader have not specified what kind of tomato belongs to grade 1 to 4, what kind of tomato the trader will sell at the local farmer and which tomatoes will be completely rejected by the trader.
- Quantity of tomatoes that the farmers are required to produce is not quantified but specified as the amount 'that the buyer is willing to buy'.
- The technical recommendations made by the buyer and Uchumi are not included in the contract and possibly also not known to the farmers.
- Penalties and bonuses are strict and seem to be quite difficult in reality especially when details are missing in the rest of the contract.

Specific monitoring on the farmers group organisation were the following:

- A process of how farmers can learn from each other is not yet defined. Monitoring of farm data can be part of this process which provides input to the farmers for discussion.
- A tool of how agreements among members and between farmers and the trader are controlled is to be developed.
- The role of members on their farm is not yet clear. Are they all farming themselves, growing tomato or are other household members more involved in this?

During the stakeholder workshop in September the following lessons were drawn:

- Investments by supermarkets are necessary to attain sustainable value chain.
- Strengthening the role of middleman towards service provision.
- Public-Private Partnerships in facilitating high-segment chains: R&D, micro-financing, Extension, Capacity building.
- Institutional arrangements: contact, contract, control.
- Supportive government policies required.
- Supportive role of supply chain facilitators.
- Enforcement of self-regulated contracts and arrangements.
- Focus on combinations of technical innovations and related organisational improvements.
- Distribution of added-value in chain between actors not too unequal.
- Look for common challenges; changes success highest.
- Facilitate transparency in transactions between chain partners.
- Market information flow on end-user requirement to farmers.
- Selected group of smallholders can participate in high-segment market; selection process.
- Top quality + well-organised farmers.

The field day on September 26 revealed the need for additional actions to be taken up in 2009:

- a) Regarding the quality of crop management, there is considerable room for improvement. The farmers' crops are confronted with considerable attack of white fly, leaf miner and cricket feeding in the nursery as well as in the production fields. In 2009 crop management data will be collected for two growing periods. These data will be analysed and comments and advises for improvements will be shared with the group during formal meetings in Kenya. The adoption of the advises will be monitored by a local consultant.
- b) The group process and the implementation of the contract with the trader will be closely monitored making use of a local consultant and witnessing formal meetings of the group. The external and local agronomist for the group needs replacement by a more independent extension officer. Finally, it is important to observe the process of mutual learning.
- c) The crop management data will be used for collective learning as well and sharing information among the farmers regarding their experiences on growing hybrid tomatoes.

Therefore the outputs for 2009 should be the following:

- Crop management data collected and analysed. Analysis discussed within the farmer group and advises for improvement on crop management shared.
- Linkage process of farmers to a high segment market is observed.
- Mutual learning process observed and discussed with the chain partners.

In 2009 the interventions will be monitored more closely and a cost benefit analysis will be made to know whether the benefit of tackling the challenge outweighs the cost of implementing the intervention.

Annex 1 Supply contract

MEMORANDUM OF AGREEMENT MADE this _____ Day of ----- between the buyer -----, hereinafter referred to as "Mr....." and the seller ----- Self Help Group, hereinafter referred to as "The Tomato Producer Group" whose address is:

The Buyer agrees to:

1. Provide credit to the group members in form of seeds and manure.
2. Buy all the available tomato produce both for Uchumi supermarket and the rest for the local market...
3. Grade and inspect the produce at the farm level, mutually agreed collection centers organized by the sub-groups.
4. Accept an invoice from the different sub-groups indicating the expected payment to the farmers for the collected produce.
5. Collect the produce between 6am and 6pm. No produce is to be collected during the night.
6. Give the farmers a minimum fixed price of Kshs.1, 500 per a crate of 60 kgs. However the price can be adjusted upwards depending on the market prices at the time of collection.
7. Make payments for invoiced produce within 14 days of collection.

The Producer Group on its part agrees to:

1. Produce the required quantities of tomatoes that the buyer is willing to buy.
2. Follow all technical recommendations made by the buyer and Uchumi Supermarket with regard to planting, weeding, fertilizing, manure application, pruning, controlling pests and diseases, picking, sorting and grading of the tomato produce, and maintenance of proper field hygiene.
3. Supervise all matters pertaining to harvesting of produce to ensure that immature or deceased produce is not harvested at any given time.
4. To conform to high standards of handling produce with a view to maintaining good quality of end product.
5. To conform to the agreed schedule for produce harvesting, transportation and collection.
6. To maintain proper records of pesticide usage and other disease control mechanisms.

7. All the group members are jointly and severally bound by this contractual agreement and will indicate their commitment by signing an attachment to the contract.

OTHER IMPORTANT ASPECTS OF A CONTRACTUAL AGREEMENT:-

- i. The group and individual farmers MUST at all times ensure that adequate protective clothing is used by those concerned with issuing, mixing or applying agricultural chemicals on the farm.
- ii. Farmers MUST ensure that all empty chemical containers are punctured, burnt and buried in accordance with safe use requirements.
- iii. All farmers MUST provide suitable secure storage space for all chemicals used on the farm, which should be well organized and clean. Neat legible stock records must be kept at all times.
- iv. All farmers MUST adhere strictly to chemical pre-harvest intervals (PHI) when spraying any agricultural fungicide/pesticide as per the buyer's recommended Pesticide List on produce grown under this agreement. These PHIs are to be recorded in every instance.

ETHICAL TRADING ISSUES:

All farmers and their respective groups must ensure that they do not contravene the International Labour Organization (ILO) in regard to employment of staff.

1. The conditions under which workers are employed must not deny or demean their basic human rights, freedoms and dignity. Producer Groups may not use forced labour, nor shall workers be required to surrender identity papers or lodge deposits prior to commencing employment.
2. The Producer Group should provide a safe and hygienic working environment, clean toilet facilities and potable water. Workplace hazards must be removed or minimized. Any accommodation must be safe and clean, with hygiene food storage, and meet the basic needs of the worker.
3. The Producer Group cannot use child labour (under 16). Young persons (16-18) must not work at night or in hazardous conditions.
4. The Producer Group must not engage in or threaten physical, sexual or verbal abuse and shall not employ harassment or intimidation of any kind.

PENALTIES AND BONUSES:

1. If the Producer Group delivers agreed specified produce, which does not meet the agreed quality standards, the Buyer will reject it. The farmers may re-submit it after sorting, but the Buyer is under no obligation to accept produce, which do not meet the agreed quality standards.
 2. If the Producer Group does not deliver produce as per mutually agreed specified time, the Group will bear the loss for the spoilt or uncollected produce and compensate the buyer for any shortfall experienced.
 3. If the buyer fails to collect the produce at the mutually agreed specified time, then he will bear the farmers loss at the market value.
 4. If the Producer Group terminates or is in breach of this contract unilaterally, she will be liable to compensate the buyer for related losses.
 5. If the buyer terminates or is in breach of this contract unilaterally, it will pay the Producer Group compensation equivalent to their recorded losses.
- Etc.....

NATURAL CALAMITIES:

Where loss is attributed to natural calamities, none of the parties will be held responsible or liable for any losses.

DURATION OF THE AGREEMENT:

This document will be binding between the parties referred to above, for a period of 12 months from the date of signing.

DISPUTE SETTLEMENT:

1. Any dispute arising as result of this agreement will be settled wherever possible by discussion between the buyer, the Producer Group and the value chain coordinator.
2. Any dispute, which cannot be settled by this process, will be referred to independent arbiter acceptable to all the parties involved – for example the local administration.

SIGNATURES:

We have read and understood the contents of this agreement and we sign it without duress, and, on our own free will.

----- (Chairman of Producer Group) Date : -----

----- (Secretary of Producer Group) Date : -----

----- (Treasurer of Producer Group) Date : -----

----- (BUYER) Date : -----

----- (Witness) Date :

We the members of Kirimukuyu Self Help Group have read and understood the terms and conditions of the tomato sales to Mr..... and do hereby voluntarily declare to abide by all its requirements.

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