



AGRICULTURE AND FOOD AUTHORITY

NUTS AND OIL CROPS DIRECTORATE

CANOLA VALUE CHAIN ANALYSIS REPORT



**Prepared by: Agriculture and Food Authority
(Nuts and Oil Crops Directorate)**

November, 2020

EXECUTIVE SUMMARY

With the widening edible oil deficit, Kenya has become increasingly dependent on imported edible oils such as palm oil, corn oil and canola oil among others. Canola is well established as a commercial crop worldwide and has numerous benefits for the farmer, the crop was introduced in Kenya by wheat farmers to enrich their soil quality and is growing in popularity.

There is an increasing consumption trend of canola oil owing to a rise in the cases of cardiovascular diseases that has made a large section of the population to focus on their health. Canola oil which has high oleic acid hence is increasingly being used by health-conscious consumers, thereby impelling the market growth.

Canola is now becoming a mainstream crop in areas with optimal temperatures between 15 to 20 degrees Celsius like Timau, Endebess and Mau Narok. It is estimated that there are more than 300 canola farmers in Kenya mainly growing it as a rotational crop. In terms of research breeding and selection activities of rapeseed have been done in Njoro with 14 varieties being released to farmers. The Kenya Genetic Resources Center has collected 18 land races of rapeseed mainly from Rift Valley.

The market for canola oil is readily available due to its high quality. The by-product is being sold as a livestock feed supplement. Based on application, the market is segregated into cooking, processed foods, lubricants, personnel care, biofuels and others. Currently, cooking and processed foods account for the majority of the global market as it is excessively used for culinary purposes

The Kenyan canola value chain comprises producers (smallholders and plantations), aggregators (traders and associations), processors (who also export), influencers and supporting organizations. Some of the proposed solutions to the challenges in the value chain include improving availability of planting material, increasing raw materials for processing, establishing a vibrant regulatory framework, value addition and more research across the value chain

Contents

CHAPTER ONE: INTRODUCTION	1
1.1. Overview of the Agriculture Sector.....	1
1.2 Nuts and Oil Crops Directorate	2
1.3 The Study Methodology	2
1.4 Objectives	2
1.5 Statement of the problem	3
1.6 Scope.....	3
CHAPTER TWO: INDUSTRY OVERVIEW	4
2.0 Background Information	4
2.1 Introduction on Canola	4
2.4 Status of value chain in the World	5
2.5 Ecological requirements.....	6
2.6 Agronomic importance of the crop.....	7
2.7 Utilization of Canola	9
2.8 CANOLA VALUE CHAIN STATUS IN KENYA	9
2.8.1 Research and Development.....	9
2.9 Input supply	10
2.10 Production	10
2.11 Marketing	11
2.12 Processing	12
CHAPTER THREE: STRUCTURE OF CANOLA VALUE CHAIN IN KENYA	13
3.0 The value chain map	13
3.2 Supporters.....	16
3.3 Value Chain Governance Structure and Cooperation	16
CHAPTER FOUR: ANALYSIS OF VALUE CHAIN OBSTACLES AND OPPORTUNITIES	18
4.1 Obstacles in the Canola Value chain.....	18
4.2 Interventions to address the challenges	20
CHAPTER FIVE: CONCLUSION AND RECOMMENDATIONS	22
5.0 Methodological issues and data gaps	22
5.6 Conclusion.....	24
Matrix on Value-chain Development Interventions	25

CHAPTER ONE:

INTRODUCTION

1.1. Overview of the Agriculture Sector

Despite Kenya's impressive advances across the economy, in innovation and entrepreneurship, private sector enterprise, infrastructure, public service delivery and human capabilities, agriculture continues to be the bedrock of the development of our nation and the key to creating equitable and sustainable economic growth for our people. No large country has ever achieved significant growth without modernizing its agricultural sector. In addition to driving our economic growth, the sector also creates jobs for our rural communities and is essential to satisfying the nutritional needs of all Kenyans.

The importance of agriculture has been highlighted in through Vision 2030 and the Medium-Term Plan III, and most recently the President's Big Four priority agenda for 2017-2022, which emphasizes the importance of 100% food and nutrition security for all Kenyans. As part of the reforms that put in place to streamline public services delivery to citizens, the Crops Act was enacted in 2013 and to operationalize this act the AFA Act 2013 was also enacted. The enactment of the AFA Act saw the inception of the Agriculture and Food Authority (AFA) within which is the Nuts and Oil Crops Directorate(NOCD)

1.2 Nuts and Oil Crops Directorate

Nuts and Oil Crops Directorate (NOCD) is mandated to develop, promote and regulate the nuts and oil crops industry in Kenya. The Directorate has a mandate to regulate following crops: macadamia, canola, sesame, jojoba, Jatropha, sunflower, safflower, bambara nuts, peanuts, cashew nuts and oil palm among others. In this regard the key functions of the Nuts and Oil Crops Directorate include collect and collate data on the industry as well as maintain a database on the industry.

1.3 The Study Methodology

The value chain study was done through the review of existing secondary data supplemented by primary data collection. The desk research examined reports on previous studies, economic surveys reports, population census reports, The Kenyan Vision 2030 development blue print, training and farming guides, journals, the internet, newspapers, agricultural bulletins and all other documents that were accessed.

1.4 Objectives

1.4.1 General Objective

To undertake a comprehensive review of the canola value chain, document the activities across the value chain and compile a report

1.4.2 Specific objectives

- 1 To determine the areas where the crop grown is establish reliable estimates of the production volumes
- 2 To identify and document the key players along the canola value chain.
- 3 To analyze the challenges faced by value chain actors

- 4 To make appropriate recommendations for mitigating challenges

1.5 Statement of the problem

The nuts and oil crops directorate is charged with the responsibility of developing, promoting and regulating the nuts and oil crops, canola being one of them. To be able to discharge this mandate the Directorate need to information about the various value chain operations. However, there is no consolidated data and stakeholders have to depend on scattered pieces of information from different existing literature. Additionally, potential investors need updated information to make informed decisions.

1.6 Scope

The value chain analysis report will cover the value chain from end to end (research, input supply, production, harvesting, post-harvest handling, marketing, value addition, marketing of final products and consumption).

CHAPTER TWO:

INDUSTRY OVERVIEW

2.0 Background Information

Many oilseed crops such as sunflower, soybeans, rapeseed/mustard, sesame and groundnuts can be grown in Kenya. With the widening edible oil deficit, Kenya has become increasingly dependent on imported edible oils. The priority is to expand domestic oilseed production, thus the need to introduce improved oil seed germplasm from other countries. On the other hand, the largest wheat and maize producing counties are experiencing acid soil problems. To alleviate this, a cheap and environmentally safe alternative has to be sought in addition to capitalizing on great potential for producing oilseeds as cash crops and alternative crops for Kenya since most of them are very early maturing (80 days) and highly adaptable.

2.1 Introduction on Canola

Rapeseed or canola is a member of the cabbage family (Brassicaceae or Cruciferae), which family also contains plants, such as, mustard, turnips, and kale. The edible oil variety of rapeseed is called canola. Its use has been recorded as early as 200BC in India. It is thought to have originated from a cross where the maternal donor was crossly related to two diploid species namely *B. oleracea* and *B. rapa*. Canola is a cool climate crop suitable for high altitude areas (1800 to 2400m) above sea level receiving an annual rainfall of 700mm per annum. Commercial varieties of rapeseed were introduced from Europe, Australia and Canada (KCWOP, 1983).

The word 'canola' is a contraction that stands for Canadian oil, low acid. The name comes from Canada, the world's largest producer of Canola. The

crop's plants are three to five feet tall that produce pods from which seeds are harvested and crushed to create canola oil and meal. These plants also produce small, yellow flowers. Canola seeds contain about 45 percent oil.

2.2 Plant characteristics

Canola grows to a height of 0.75 to 1m. It has four distinct stages of development. At the seedling stage the crop can easily be suppressed by weeds. Increasing leaf area occurs at the rosette stage until the crop reaches the budding stage. Yellow flowers start forming at the top of the stem at the flowering stage. Flowering lasts two to three weeks after the initial flower appears. Pod filling occurs 5 to 7 weeks after flower initiation.

2.3 Growth conditions

Rainfall: 1000-2000mm. Canola requires more rain during its vegetative stage and some rain during its flower and pod fill stages.

Soil types: Medium textured and well-drained soil. Canola is tolerant to low soil pH (pH 5.5) and saline conditions.

Maturity period: 2½-5 months

Temperature range: 10-30°C

Altitude: 1830-2740m

2.4 Status of value chain in the World

Major growing areas include temperate areas of North America, Europe, Asia, and Australia including Scandinavia, China, and India, where the crop has a long history including origin, along with Canada and Australia, where the crop is a relatively recent introduction. Canola and rapeseed rank second

in world production of oilseeds, with 13% of the total compared with 57% for soybeans and 10% for cottonseed . The world trend is for increasing production of canola-quality seed, especially for nutritional purposes, although there will continue to be a market for high erucic acid

A rise in the cases of cardiovascular diseases has made a large section of the population to focus on their health. As canola oil has high oleic acid which helps in lowering the bad cholesterol levels present in the body, it is increasingly being used as a cooking oil by health-conscious consumers, thereby impelling the market growth. On a geographical front, Europe enjoys the leading position in the global canola oil market. The rising demand for canola oil can be accredited to the increasing rate of health problems and chronic diseases in the region. Europe is followed by Asia Pacific, North America, Middle East and Africa, and Latin America.

2.5 Ecological requirements

Canola is a cool climate crop and it fits well as a break crop in Cereal farms within 350 mm-700 mm rainfall range. It does well in medium to high altitude with average temperatures of 20 to 26 degrees centigrade. Soils should be relatively fertile well-drained medium loams to heavy clay. The ideal soil pH is between 5.5 and 7. For a cereal farmer, the essentials of growing wheat or canola are the same. It is suitable for high altitude at 1830-2740m (UH2-UH3) above sea level with average rainfall of 700mm. Low rainfall at flowering and grain filling can drastically reduce yields. It performs well in drained soils but best suited to sandy loams and loams. It grows best within a temperature range of 12-30°C with an optimum at 20°C. High temperatures reduce yields. Temperatures below 10°C result in

poor germination and emergence. Temperatures in the range of 27-30°C impairs seed production. Suitable pH is 5.8 -7.5. In Kenya the crop is grown around Mt. Kenya region (Timau), Narok (Mau-narok), Nakuru(Molo, Njoro, Rongai), Bungoma(Mt.Elgon), Kiambu(Limuru) and similar environments

2.6 Agronomic importance of the crop

Canola is well established as a commercial crop worldwide and has numerous benefits for the farmer, the crop was introduced in Kenya by wheat farmers to enrich their soil quality and is growing in popularity. Kenya is an agricultural country hence continuous crop production in soils in most parts are now acid. Canola's known for the ability to grow deep into the soil and mine H⁺ ions raising the soil PH, once established smolder's all kinds of weeds. Canola roots exudes compounds in the root zone which control root diseases by bio fumigation.

As a rotation crop it has numerous benefits for the soil and the farmers. It is a break with the past from traditional to conservation farming. The farmers' risks are more diversified compared to planting mono-crops and it increases their climate resilience. An approach that will result in higher yields and returns as well as reduced labor, fertilizer and pesticide costs.

The following are the specific benefits of growing canola

- Rotational purposes - The plant contains chemical compounds, which repel cereal pests.

- Reduces soil erosion and improves the water retention capacity of soil prior to planting of the cereals
- Canola has demonstrated a proven ability to suppress rye grass and brome grass, which are highly competitive weeds, most problematic in all wheat and barley growing areas in Kenya
- Canola plant residue is higher in nitrogen and phosphorus than wheat and barley straw, cycling of nutrients from residue to the subsequent crop is an important rotational benefit of canola.
- Being a deep rooting plant, it accesses deep nutrients, opens the soil structure and enhances biological function in soils which is very vital before wheat, barley or maize is planted on a field.
- Canola is grown for its highly nutritious oil, which is extracted from the seeds. The plant produces Omega 3, 6 and 9 fatty acids that are otherwise only found in fish and are known to prevent arthritis, diabetes and heart disease besides giving many other health benefits.
- Canola cakes are highly nutritious for chicken and other domestic animals. The crop has only seven per cent cholesterol level, while sunflower oil has 12 per cent, olive oil has 15 per cent, maize oil has 20 per cent and coconut oil has 22 per cent,” explained the agronomist.
- Financial Gains: The introduction of canola, say on a 3year cycle initially, will lead to improved net income and profitability over the period. The following crops after canola, generally yield higher as a result of the disease, weed clean up and gradual improvements in soil health. Reports as high as 20% yield increase in the following cereal crop have been reported.

2.7 Utilization of Canola

Canola leaves are edible and considered a delicacy in Asia. The oil from rapeseed was used to lubricate steam engines and as a biodiesel feedstock in Europe. It is also used in the manufacture of soaps. Due to the decreased erucic acid level in canola, the oil is less bitter and edible. Canola oil is used as salad oil and in the manufacture of margarines and shortenings. The oil seed meal or cake is used as livestock protein feed supplement as it contains 48-52% protein. The meal is also a high-quality organic fertilizer that can be used by commercial organic farmers. In addition, canola is grown as a biofuel. (Nagaraj, 1995). Canola oil is extracted from the canola seed. The oil is mainly used as a vegetable oil and is one of the healthiest and most versatile cooking oils available, renowned for its nutritional and culinary qualities. It is a rich source of omega-3 and omega-6 fatty acids, monosaturated fats, and vitamin E.

2.8 VALUE CHAIN STATUS IN KENYA

2.8.1 Research and Development

The work done at the National Plant Breeding Research Centre – Njoro between 1986 and 1996 has shown that rapeseed is widely adapted and in Kenya, production is between 1830m a.s.l. and 2,700m a.s.l. (UH2 –UH3). At KARI –Njoro, adapted canola germplasm is being improved using selection, mutation and doubled haploid methods.

Breeding and selection activities of rapeseed have been done in Njoro with 14 varieties being released to wheat and barley farmers (NPBRC, 2000). The Kenya Genetic Resources Center has collected 18 land races of rapeseed

mainly from Rift Valley. Since the rapeseed varieties in Kenya have low erucic acid and glucosinolates they are considered to be canola (NPBRC, 2000).

2.9 Input supply

Canola is propagated by seed. There are recommended and released varieties of canola suited for different ecological environments. Currently the two main seed varieties available in Kenya are:

- a) "Belinda" distributed by Bayer East Africa Ltd and
- b) "TT Hyola" distributed by Kenya Highlands Seeds.

These are hybrids which take 100-120 days to mature with a potential yield of 4.2 tons/ha. They have good resistance to black leg disease and lodging. Have low glucosinolate content and no erucic acid. The Agventure contracted farmers are bound to use certified seed supplied by the recommended suppliers who import into the country. Among small scale farmers however it is a common practice to recycle seed from the previous seasons which results in little grains being harvested, as a result of seed storage problems.

2.10 Production

Canola is now becoming a mainstream crop in areas with optimal temperatures between 15 to 20 degrees Celsius like Timau, Endebess and Mau Narok. It is estimated that there are more than 300 canola farmers in Kenya mainly growing it as a rotational crop. However, success with canola requires careful management and close attention to detail to maximize its potential. The crop yield 2-4 tones/ha with Oil content of 48% and protein

content 40%. Canola is mainly grown by large-scale maize, wheat and barley farmers in the following counties:

- 1 Laikipia (Rumuruti, Naromoru, Nanyuki, Nyahururu)
- 2 Meru(Timau)
- 3 Nyandarua (Njabini)
- 4 Nakuru (Rongai, Kuresoi, Mau Narok, Njoro)
- 5 Bungoma (Mt. Elgon)
- 6 Baringo (Eldama Ravine)
- 7 Samburu(Maralal)
- 8 Kiambu(Limuru)
- 9 Uasin Gishu (Kesses and Moiben)
- 10 Narok (Narok East)
- 11 Trans Nzoia (Endebess and Kiminini)

2.11 Marketing

The market for canola oil is readily available due to its high quality. The by-product is being sold as a livestock feed supplement. Based on application, the market is segregated into cooking, processed foods, lubricants, personnel care, biofuels and others. Currently, cooking and processed foods account for the majority of the global market as it is excessively used for culinary purposes. In Kenya the marketing of canola is dominated by Agventure Ltd which offers a contract at a fixed price of Kshs. 40 per Kg and a Ksh 5 bonus dependent on the farmer practicing good agricultural practices. As per the contract farmers are paid within a week of delivery. The seeds are then crushed and the oil sold to Unilever to use in its product range. Agventure also introduced the Pure Mountain Farm Oil brand to the

market in 2010, this is a cold-pressed Canola product, suitable for all types of cooking. The demand for canola oil skyrocketed after Baking, Cooking and Spreads wing of Unilever Ltd adopted it for processing some of its product

2.12 Processing

Canola is preferred for oil extraction since it has soft seeds. When pressed 3-4 kg of seed produces one litre of oil and 2-3 kg of canola seed cake. Canola oil is also used in the skincare and cosmetics industry due to its anti-aging properties which assist in reducing acne, fine lines, wrinkles and blemishes. Apart from this, it is also employed in the haircare sector as canola oil helps in smoothening hair. Growth in these end-use industries is further creating a positive outlook for the canola oil market.

There are two canola processing factories in Kenya located in Timau (Meru County and Menengai (Nakuru County) owned by Agventure Ltd. There is also a small scale cottage level factory known as Kieni Canola located in (Nyeri County). The processing technology used in the country has an output that averages 30% Oil, 60% cake and 10 % water when fed with best seed quality. Unilever are currently the largest consumers of canola oil in Kenya to manufacture Blue Band. It is noteworthy however that there is insufficient raw material supply and therefore the installed capacity is largely underutilized. Agventure Ltd operated factories operate only for two hours a day but have potential to operate 24hrs, the factories are limited by lack of enough raw material

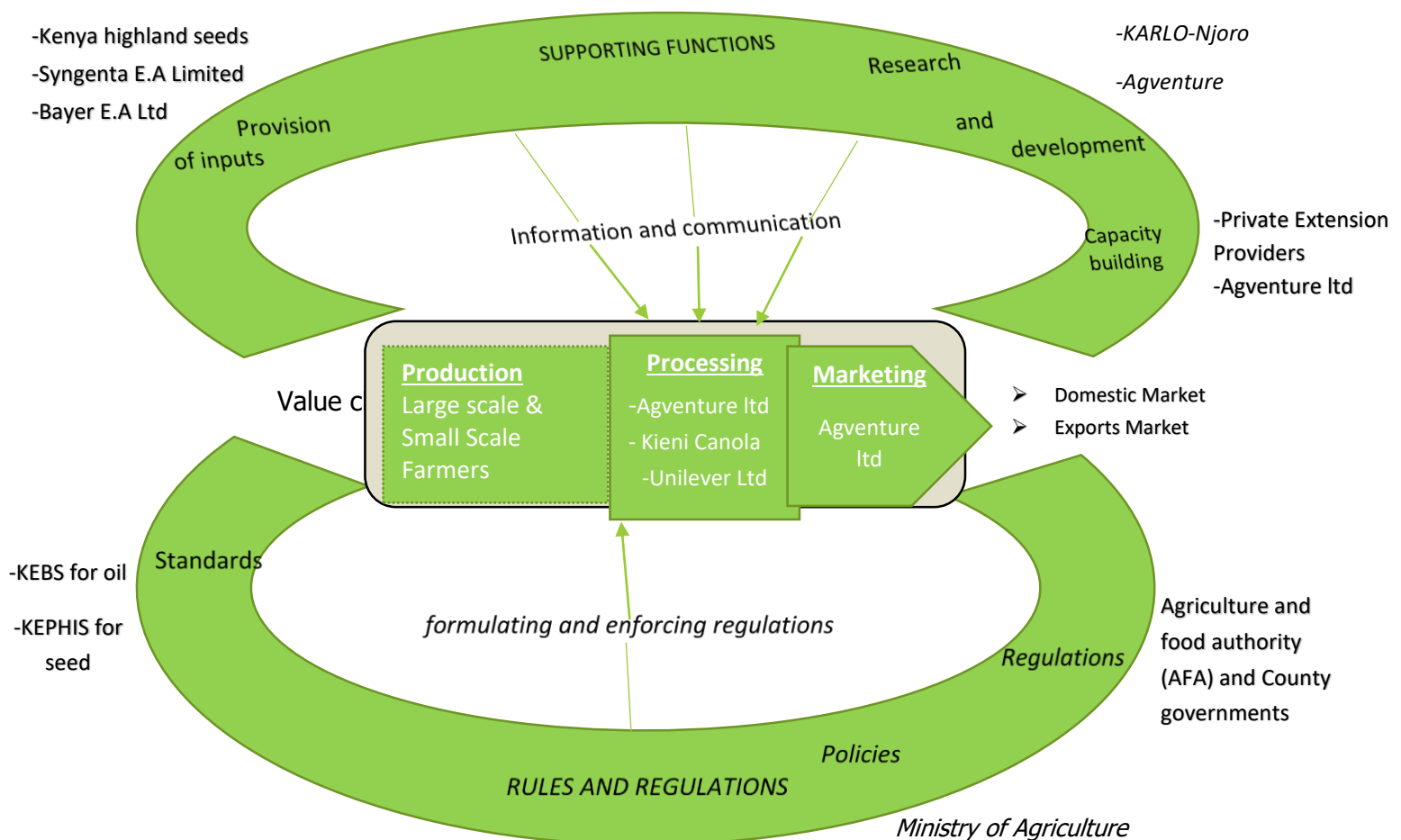
CHAPTER THREE:

STRUCTURE OF CANOLA VALUE CHAIN IN KENYA

This chapter provides a textual analysis of the structure, governance and sustainability of the canola value chain in Kenya. It also presents a visual value chain mapping, showing the main actors, supporters and influencers in Kenya's macadamia value chain, as well as their interrelation.

3.0 The value chain map

The Figure below shows a visual mapping of Kenya's canola value chain. A brief profile of actors, influencers, and supporters is presented in sections



3.1 Value chain actors, influencers and supporters

The Kenyan canola value chain comprises producers (smallholders and plantations), aggregators (traders and associations), processors (who also export), influencers and supporting organizations.

3.1.1 Smallholders

There is uncertainty about the number of smallholders active in the Kenyan canola sector. In 2019 it was estimated that 500 farmers were involved in the sector. Agventure has trained and registered more than 300 canola farmers. Most farmers produce an average of 6 tones acre/year per

3.1.2 Processors

Apart from adding value to canola by processing it, processors also conduct a work like that of the trader, in which they aggregate the crop. The canola processors have their own lorries (or rental lorries) to transport canola from farms or buying stores to the processing plants.

3.1.3 Influencers.

The Main influencers in Kenya's canola value chain are large scale wheat farmers the Kenya Bureau of Standards, and County Governments. However, after the gazettment of the Nuts and Oil Crops regulations 2020 there is going to be Agriculture and Food Authority (AFA) as a major influencer being responsible for regulation and governance. Being the main government agency responsible for oil crops. It will play a key role in providing an enabling environment for canola production. Particularly, AFA's mandate is to administer the Crops Act in accordance with the provisions of AFA Act,

2013, crops Act 2013 and to regulate, the production, processing, marketing, grading, storage, collection, transportation and warehousing of agricultural products. Moreover, AFA will have a role in advising the national government and the county governments on agricultural levies for purposes of planning, enhancing harmony and equity in the sector.

3.1.4 The Kenya Bureau of Standards (KEBS)

This is the national standards organization of the Republic of Kenya. During the development of Kenya Standards, documents are circulated for study within the technical committees or sub-committees. These documents pass through several stages before they can be approved as Kenya Standards. This procedure is designed to ensure that the result is acceptable to as many interest groups as possible. In this context, KEBS' most influential standards for the Kenyan canola is for the oil.

3.1.5 County Governments

In each of the canola producing regions are crucial to the development of the Kenyan canola sector. County Governments work together with national and international (non-)governmental organizations to enhance regional development across several productive sectors. Primarily, county governments are responsible for extension support, however extension is mostly done by private sector processors that invest in their suppliers (i.e. farmers). While there are government-supported extension services, these do not focus on canola. Other stakeholders influence the canola value chain one way or another, including: KEPHIS and the Ministry of Industry, Trade and Cooperatives.

3.2 Supporters

There are several stakeholders that provide various forms of support both to canola farmers and for the development of the value chain.

3.2.1 Kenya Agricultural and Livestock Research Association (KALRO):

KALRO is a corporate body created under the Kenya Agricultural and Livestock Research Act of 2013 to establish a suitable legal and institutional framework for coordination of agricultural research with the goals of promoting, streamlining, coordinating and regulating research in crops, livestock, genetic resources and biotechnology in Kenya. One of KALRO's sub-Programmes is canola research, which is organized in three research units: breeding, agronomy, and crop protection. The research is carried out at KALRO Plant breeding center in Njoro. Breeding work focuses on development of superior varieties through introduction and selection, evaluation of cross-bred lines and local adaptation trials in the various agro ecological zones. Funding for research and extension is lacking but necessary in order to improve canola varieties and the management practices of farmers. Currently, research is dormant due to the lack of funding.

3.3 Value Chain Governance Structure and Cooperation

The Kenyan government, through AFA should be the center of governance of the canola sector in the country. The two main instruments for regulating the sector is the Crops Act 2013 and the Kenya Agriculture and Livestock Research Act (particularly Section 43). AFA-NOCD are the primary

institutions responsible for leading the sector and implementing the development strategy and directive.

Plantations: The crop is mainly being grown as a relay crop in large scale wheat farms in high attitude zones, however few small scale farmers also grow canola on contract for sale to the processors

CHAPTER FOUR:

ANALYSIS OF VALUE CHAIN OBSTACLES AND OPPORTUNITIES

This chapter provides a textual analysis of the identified opportunities and obstacles in Kenya's canola value chain. It also highlights the identified obstacles and stakeholders that may be involved in providing business solutions.

4.1 Obstacles in the Canola Value chain

4.1.1 Low Productivity

Several factors affect the low productivity of Kenyan canola farmers. Based on stakeholders' interviews some of the factors are summarized below.

4.1.2 Effect of climate change

Kenya's good arable land and favorable weather conditions render canola production a promising sector. Part of the reason why the sector does not live up to its full potential lies in the impacts of climate change. Specifically, irregular rainfall and drought have been highlighted by key informants. Changing climatic conditions cause low and unstable productivity in the sector.

4.1.3 Lack of readily available planting materials.

The seed used in Kenya is imported hence not readily available to farmers in the major production zones. The seed supply chain is controlled by major processing companies; the companies only provide the seed to their contracted farmers. The released varieties from KALRO are yet to be multiplied and be made commercially available to farmers across the country

4.1.4 Insufficient information about the canola Value chain.

The canola value chain is dominated by large scale farmers who have a direct stake in the processing companies. The investment opportunities existing across the canola value chain are not known to the general public as the existing players are unwilling to share production and market related data to enable government and potential investors make informed decisions

4.1.5 Inadequate raw material for processing.

Kenya installed capacity is much higher than the available raw material for processing. The existing potential for increased production and productivity is yet to be exploited.

4.1.6 Dominance by few buyers.

There is only one major buyer of canola produce and another small cottage level processing facility. Farmers have limited options when marketing their produce hence receive uncompetitive prices

4.1.7 Existence of weak regulatory framework.

The canola value chain players do not operate under the prevailing regulatory regime within the nuts and oil crops subsector. The dealers and processors have not been licensed and the imports/exports consignments are not cleared from the Nuts and Oil Crops Directorate. The lack of control on industry operations poses challenges in dispute resolution, data collection and also in crafting interventions to jumpstart the industry

4.1.8 Limited on farm value addition.

This is a result of lack of affordable and appropriate technologies and skills for processing. Cottage level processing will help farmers increase their incomes as opposed to the returns currently accrued from sale of raw produce.

4.1.9 Limited Research.

Research activities relating to canola which is spearheaded by KALRO suffers from lack of budgetary allocation to realize the objectives envisioned. For instance, the developed varieties cannot be multiplied and made available to farmers due to lack of finance. Similarly, little research has taken place to develop new varieties, better processing technologies and development of new canola finished products.

4.2 Interventions to address the challenges

4.2.1 Improving availability of planting material.

This can be made possible through seed multiplication and commercialization of the varieties released by KALRO instead of relying on imports from others parts of the world

4.2.2 Making information available to the general public.

There is need to promote the canola value chain as an alternative to the existing enterprises to attract more players. The promotion can be spearheaded by the respective County government as a priority value chain in the high potential zones. More players will make the industry open to scrutiny, this will make it possible to have information about the investment opportunities in the subsector readily available.

4.2.3 Increasing raw materials for processing.

Promotional activities need to be carried out to bring more farmers on board and bring land under the crop while at the same time sensitizing farmers on good agricultural practices to increase productivity per unit area.

4.2.4 Increasing the number of players operating in the industry.

There is need to licence more players across the value chain right from seed production to processing. More players will make the industry competitive leading to better prices for farmers as processors scramble for their produce.

4.2.5 Improved regulatory framework.

The gazetted Nuts and Oil Crops rules and regulations provide a framework to regulate the canola value chain players previously not regulated. Seed imports will be documented while final value added products will also be properly accounted for. Such regulatory measures will inform the industry growth and expansion path. To achieve this the Directorate must therefore prioritize the development of an implementation plan for the rules and regulations.

4.2.6 Increased farm and cottage level value addition.

Capacity building and training on value addition activities are urgently required in the canola value chain. These can be targeted at farmers, farmer groups, youth groups and women groups who want to venture into new income generating activities. Introduction of processing technologies to the targeted groups will also boost value addition to realize a wide array of new products.

4.2.7 Increased research activities

Research activities along the canola value chain have been hindered by lack of financing especially in seed production and value addition. To adequately address these financial constraints, the nuts and oil crops subsector may have to come up with a research fund ring fenced to address the research gaps identified.

CHAPTER FIVE:

CONCLUSION AND RECOMMENDATIONS

5.0 Methodological issues and data gaps

Information was gathered from a wide range of sources and experts to provide the best available data in support of the value chain analysis. The research made use of both objective sources of data as well as more subjective information gathering from interviews. With this approach we aimed at providing a comprehensive, balanced and insightful report. However, not all questions could be exhaustively answered based on the researched information. Some issues encountered include.

5.1 Outlook on market developments

Providing information on expected market developments in the future carries the inherent risk of not being able to predict yet unknown influences. This is especially true for volatile markets for agricultural products. Interviews with sector experts were used to identify likely market developments and influences that may shape these events, however the nature of information given is subjective.

5.2 Availability and willingness of canola processors and large scale farms to provide information

Based on field visits most large scale farms and processors were unwilling to provide information on their operations. Information about acreage, yield and production volumes was not easily forthcoming. The respondents

required that we book appointments on email before the information could be shared, unfortunately the emails were not responded to. In other instances, the contacted farmers and processors declined our request for information.

5.3 Desktop research limitations.

The desk top research on canola was faced with the challenge of lack of data on local canola growing. Most literature reviewed was on canola as grown in South Africa, Canada, Europe and other countries. Generally, there is very little and scanty data existing about the crop globally. Very few studies have been done on the crop. Data was documented as was studied or sourced

5.4 Availability of market data

Due to their still comparatively small production volume and market share of the Kenyan canola, the availability of product-specific and detailed trade and market data is limited. Interviews with sector experts were used to obtain specific market insights and to identify influencing factors that may promote or limit the market for canola in the coming years.

5.5 Opportunities and synergies

The contracts currently signed between processors and farmers help farmers obtain direct markets for their produce at the farm level. The processors could also provide technical assistance to innovation platforms on canola while at the same time engaging its members to adopt GAP. KALRO, in the context of a focused value chain Programmes to develop methods to control predominant canola plant diseases.

5.6 Conclusion

The crop is used for the extraction of very nutritious edible oil but awareness among farmers in Kenya is very low. This can be a much sourced commodity given the rising need for organic oils both locally and internationally. Agventure Company Limited is currently promoting the crop through production on its satellite farm in Timau and Eldoret and also through a number of contracted farmers. Seed availability is a major challenge for farmers and they recycle seed which reduces yields. There is no evidence of any research done to improve crop variety or seed multiplication.

Appendix 1

Matrix on Value-chain Development Interventions

Key Intervention in the VC segment	Activities	Expected Outputs	Expected outcomes
Promote Research along the canola Value chain	Baseline survey	Baseline report	Industry status established in terms of production zones, yield per unit, number of stakeholders, prevailing prices and the challenges in the subsector
	Development of high yielding and disease resistant varieties	New varieties released	Improved production quantities realized and reduced cost of production as a result of low disease and pests incidences
	Carry out a national Canola suitability mapping	A canola National suitability map developed	New production zones identified for expansion to improve total production
	Capacity Building of Researchers	Training reports	Researchers better equipped to identify research needs and generate new technologies in production and value addition
	Research on Good Agricultural Practices	Good agricultural practices employed	Good agricultural practices adopted in different production zones.
	Dissemination of Research findings	Training stakeholders	Improved farming practices leading to high production.
	Development of value addition	New final products from canola and adaptation of	Increased incomes from the news products out new technologies adapted.

	Technology and transfer	new technologies by stakeholders	
Promotion sustainable supply of planting material	Multiplication of canola seed for commercialization	Availability of certified seeds	Increased production hence adequate raw materials for the industries
	Supply and distribution of certified seed	Assessment of certified seeds	Adequate planting materials for the both small and large scale farmers
Promotion of Sustainable Canola Production and Productivity	On farm demonstrations /field days	Establishment of demos	Implementation of good agricultural practices by famers
	Specialized trainings for County Agricultural Officers extension staff	Training agricultural officers	Dissemination of information to the stakeholders for leading to high production
Increase value addition and processing	Carry out a Value Chain Study	Value Chain report	Increased linkages and partnerships within the value chain from the mapping gaps identification
	Identification and Promotion of investment opportunities	Investment Profile report	Increased investment in the subsector from the and existing opportunities exploited
	Business development and mentoring (include stimulus package)	A business incubation centre developed	Business sustainability realized through mentorship and reduced number of businesses failing due to lack of information
	Training of SMEs women and youth	Trained number of youths and	More youths and women engaging in canola production for increased productivity

	groups on value addition	women groups	hence self-employment and business
Improve market access	Formation and capacity building of marketing associations	Marketing research and market information	Formation of cooperatives and associations leading to improved market assessment for better prices of both inputs and produce
	Establish and operationalize collection centers	Establishment of collection centers for small scale farmers	Reduced bulking costs of raw produce for processors Better bargaining power and reduced exploitation among small scale farmers due to better prices Easy data collection to inform industry decision making
	Finished Products promotion	Marketing	Market access increased for the finished product and better prices the canola products
Improve access to finance for the coconut industry players	Credit need survey	Credit need survey report	Finance needs identified and financial products developed in response to the needs
	Establishment of a Development fund (Seed Fund) to promote processing and trade	Fund established	Availability of affordable and easily accessible source of financing for canola value chain businesses
Policy Development	Sensitization of canola stakeholders on the Nuts and oil crops rules and regulations for implementation	No of sensitization forums held	An organized well regulated industry operating on fair and equitable ground for sustainability

Appendix 2

Canola Production Data 2019

County	Area (Ha)	Qnty(MT)	Value Ksh (Millions)
Nakuru	1,115	3902.5	156,100
Elgeyo Marakwet	123	430.5	17,220
Meru	405	1417.5	56,700
Narok	243	850.5	34,020
Laikipia	1,072	3752	150,080
Baringo	162	567	22680
Trans -Nzoia	202.5	708.75	28,350
Uasin Gishu	203	710.5	28,420
Nyandarua	165	577.5	23,100
Samburu	162	567	22,680
Bungoma	81	283.5	11,340
Nyeri	121.5	425.25	17,010
Total	4,055	14192.5	567700

Canola Seed exports 2019

Country	Quantity(MT)
Zambia	10