

KENYA'S PYRETHRUM INDUSTRY
2005



KENYA

EXPORT PROCESSING ZONES AUTHORITY



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TABLE OF CONTENTS

1. INDUSTRY OVERVIEW	1
2. INDUSTRY STRUCTURE	2
3. PRODUCTION OF PYRETHRUM	2
3.1. GROWING OF PYRETHRUM	3
3.2. PROCESSING OF PYRETHRUM	3
3.3. MAIN USES & APPLICATIONS	4
4. MARKET CONDITIONS.....	5
4.1. EXPORT VALUES	5
4.2. EXPORT DESTINATIONS	5
4.3. EXPORT PRICES	6
5. LEGAL & REGULATORY FRAMEWORK.....	6
6. REASONS TO INVEST IN PYRETHRUM INDUSTRY	7
7. INVESTMENT OPPORTUNITIES.....	9
8. USEFUL CONTACTS.....	9
9. SOURCES OF INFORMATION & GLOSSARY	10

List of Charts

	Page
Chart 1: World Pyrethrum producing countries	1
Chart 2: Recorded marketed production at current prices	4
Chart 3: Value of pyrethrum extract exports 1999-2003	5
Chart 4: Kenya's main pyrethrum extract exports markets, 2002	6
Chart 5: Prices of Pyrethrum extract exports 1999-2003 (KShs/Kg)	6

List of Diagrams

Diagram 1: Organisational structure of the pyrethrum industry in Kenya	2
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Abbreviation

PBK	Pyrethrum Board of Kenya
GDP	Gross Domestic Product
EPZA	Export Processing Zones Authority
IPC	Investment Promotion Centre
UN	United Nations
IGAD	Intergovernmental Authority on Development
COMESA	Common Market for Eastern and Southern Africa
WTO	World Trade Organisation

Annual Average Exchange Rates (KShs to US\$)

Year	Rate
1999	70.3
2000	76.2
2001	78.6
2002	78.4
2003	75.9
2004	80.0 (As at 31 st August 2004)

For latest rates click on <http://www.centralbank.go.ke/cbk/FXrates/archives.html>



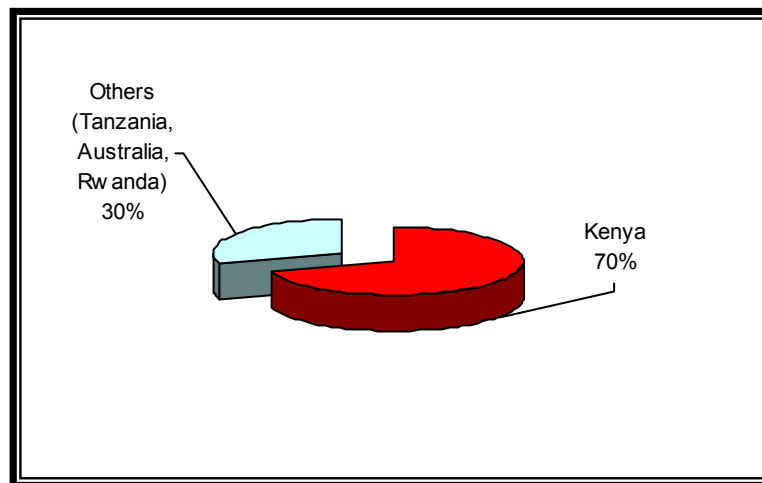
1. Industry overview

Agriculture is one of the most important sectors of the Kenyan economy accounting for about 24% of Kenya's GDP and with an estimated 75% of the population depending on agriculture either directly or indirectly. Some 200,000 families in Kenya are engaged in the cultivation of Pyrethrum and therefore support an estimated 1 million people. For the country as a whole Pyrethrum is an important foreign exchange earner and a significant contributor to the Kenyan economy.

Pyrethrum cultivation in Kenya dates back to 1928, when Captain Gilbert Walker of the Imperial Institute brought it from Kew Gardens in London. After experimental work in Njoro, he harvested the first crop in 1929 and sent the first flowers to the Imperial Institute for analysis.

Currently, Kenya is the leading producer of pyrethrum extract producing approximately 70% of the world consumption. Other large producers of pyrethrum are Rwanda, Tanzania and Tasmania in Australia. The pyrethrum extract is mainly exported to USA, Europe and Asian countries. The main pyrethrum extract producing countries in the world are highlighted in chart 1 below.

Chart 1: World Pyrethrum producing countries



Source: *Pyrethrum Board of Kenya, 2004, Ministry of Agriculture*

Ideal growing conditions for Pyrethrum include temperate weather ("Spring Climate"), moderate but well distributed rainfall, low night temperatures, altitudes of 2,000 metres and rich volcanic soils. These climatic conditions are found in four major regions in Kenya namely Lake Victoria, northern Rift Valley, southern Rift Valley and Mount Kenya regions. Any shortfall in production in one region due to bad weather can be supplemented by higher production in the other growing regions.

Diversification of growing regions as well as a flexible seed programmes would ensure availability of pyrethrum flowers at all times. Thus investment in production of pyrethrum flowers and seeds, in addition to processing of pyrethrin are assured of ready local, regional and international markets. Attractive investment incentives and production advantages are found in Kenya.



2. Industry structure

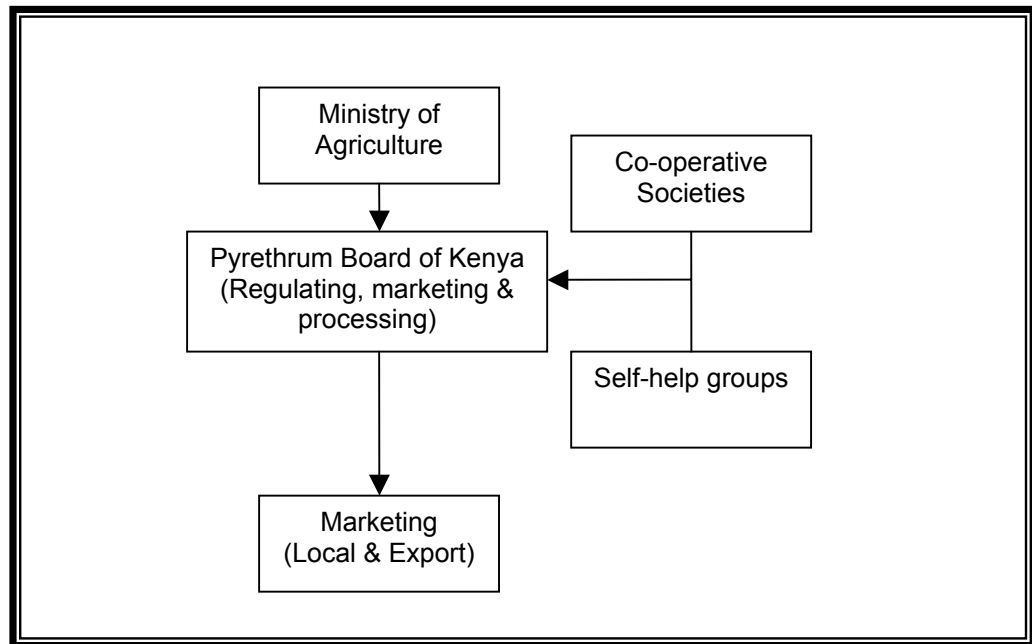
The Pyrethrum industry has grown since 1928 when the first plant was introduced in Kenya. In the early years, pyrethrum produce was shipped directly to Europe, America and other export markets.

Pyrethrum Board of Kenya (PBK) constructed the current pyrethrum-processing factory in 1959, while the second was constructed in 1962. The two factories are currently the only pyrethrum processing units in Kenya and are both based in Nakuru. Their annual installed capacity is 30,000 tonnes, though this has reduced to between 5,000 – 6,000 tonnes due to a fire at one of the factories in March 2003.

PBK is the sole processor of pyrethrum in Kenya. The Board provides input to the farmers who in turn take their produce to the Board, which processes and markets the refined extract in Kenya and abroad.

Traditionally, co-operative societies have been the major producers of pyrethrum in Kenya. However in recent years, self-help groups and individuals have also been registered as producers and suppliers of pyrethrum flowers to PBK.

Diagram 1: Organisational Structure of the pyrethrum industry in Kenya

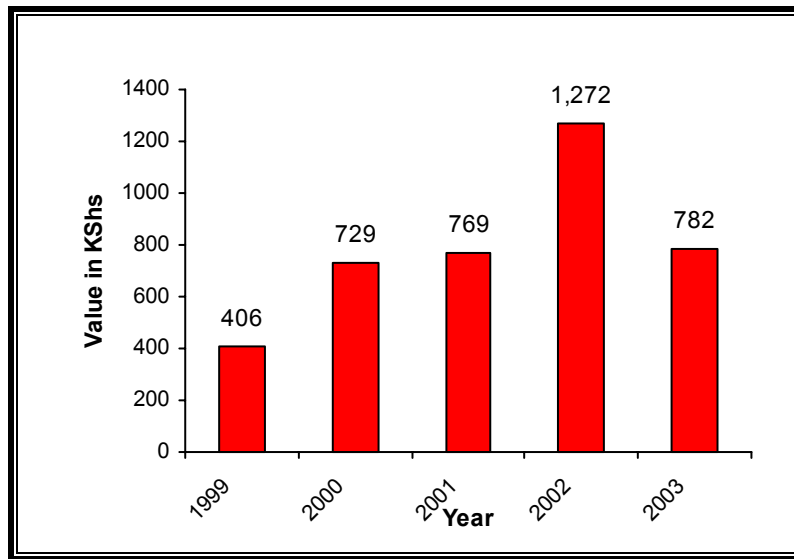


3. Production of Pyrethrum

Production of pyrethrum has been on a steady rise from 1999 to 2002. However in the year 2003, production at current prices declined from KShs. 1,272 Million in 2002 to KShs 782 Million in 2003. This could be attributed to the increased production of synthetic insecticides, which affect production and marketing of pyrethrum in the World markets. Chart 2 below details Kenya's production trend in the last 5 years.



Chart 2: Recorded marketed production at current prices, 1999-2003 (KShs Millions)



Source: *Economic Survey 2004 by Central Bureau of Statistics, Ministry of Planning & National Development*

In the year 2003, Kenya produced 107.8 tonnes of pyrethrum extract, which was a decline from the previous years' production of 174.9 tonnes. This represented a 38.1% decline in production.

3.1. Growing of Pyrethrum

In the growing of pyrethrum in Kenya, one hectare accommodates 52,000 plants producing approximately 1,000 kg of dried pyrethrum flowers annually. This quantity yields approximately 25 kg of highly refined extract. Ready flowers are picked at intervals of two weeks with picking continuing for nearly a whole year from July to April the following year. Although Pyrethrum is a perennial crop, a typical plantation lasts for three to four years.

Harvested flower heads are sun dried and delivered through a network of rural co-operatives to the centrally located factory of the PBK. Farmers are paid according to the weight and content of their harvests.

Farm inputs

Pyrethrum is well adapted to Kenyan conditions and does not require chemical inputs such as fertilizers, herbicides, etc. It is a truly a botanical insecticide produced under organic conditions.

Planting materials

For purposes of genetic preservation, the PBK maintains an extensive library of diverse clones and varieties. Plants are selected through research with regard to their *Pyrethrin* content, annual yield per acre, resistance to disease and other environmental factors. PBK avails the most suitable plants to the farmers and also offers extension services to advise on growing and husbandry.

3.2. Processing of Pyrethrum

Pyrethrum processing calls for a large number of specialised technical and analytical functions. In this regard, PBK has well equipped modern laboratories that are maintained and manned by experienced chemists and technicians.

In addition, the Board has made substantial investments in the development of appropriate machinery and other physical inputs with the overall objective of matching output with the world demand. PBK operates the largest pyrethrum extraction and



refining plants in the world. Quality is a priority at PBK and quality assurance tests are conducted at all stages of processing.

All flower deliveries from the fields are inspected for quality, weighed, sampled and analysed for *Pyrethrin* content at the PBK laboratories. They are then stored under carbon dioxide or directly passed to the various processing stages according to requirements, e.g. manufacture of powders or extracts.

Process Control

Every stage of processing undergoes a rigid control system. All factory inputs are routinely analysed for conformity with specifications. In-process control employs methods of analysis such as Gas Liquid Chromatography, Thin Layer Chromatography, Ultra Violet and Infra Red Spectrometry as well as HPLC (High Performance Liquid Chromatography).

Quality Control

Before release to a customer the PBK laboratories inspect all products by use of state-of-the-art analytical methods. Each shipment is accompanied by an Analysis Certificate to testify compliance of the product with its specification as well as regulations of the receiving country or its specific use.

The ranges of pyrethrum products from PBK include the following:

- **Refined Pale Extracts:** This is a highly refined extract available in both 25% w/w and 50% w/w concentrations. It is primarily used in the manufacture of aerosol products, vaporising mats, liquid evaporating formulations and certain specialty veterinary and pharmaceutical preparations.
- **Crude Oleo Resin (OR):** Crude OR is a dark viscous liquid containing 25% w/w *Pyrethrin*. It can be used in the formulation of mosquito coils as well as space sprays and dusts.
- **Superfine Pyrethrum Powder 1.3% w/w:** This is a finely ground powder of Pyrethrum flowers standardised to contain 1.3% w/w *Pyrethrin* mainly used as an active ingredient in the manufacture of mosquito coils.
- **Pyrethrum Marc:** These are the vegetable remains after the extraction process. In a finely gritted form it is an ideal and highly accepted filler material in mosquito coils.

3.3. Main Uses & Applications

Pyrethrum is the oldest insecticide known to man and well recognized for low mammalian toxicity and non-persistence in the environment. It rapidly knocks-down and kills a wide variety of insect pests such as cockroaches, mosquitoes, fleas, houseflies, etc.

It is also widely used in horticulture and by growers of organic crops for the control of leafhoppers and other common pests. Major use areas include:

- **Indoor Residential (Home & Garden):** Household aerosols, trigger sprayers, mosquito coils & mats and shampoos for pets.
- **Terrestrial Non-Food:** Mosquito control and public health measures (Flies)



- **Indoor Food:** Sprays & fogs for farms & dairies, protection of food processing & handling, protection of stored products and sequential aerosols for restaurants.
- **Terrestrial Food:** Organic crops protection, minor crops protection and horticulture

4. Market conditions

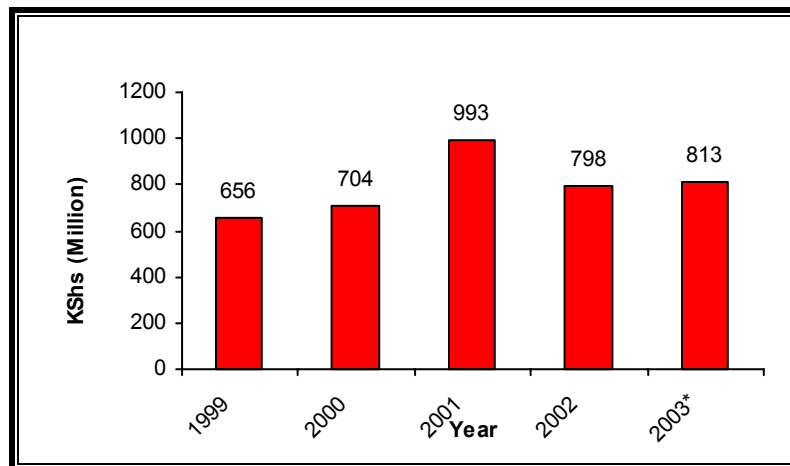
Marketing of Pyrethrum in Kenya is under the direct control of the Government through the Pyrethrum Board of Kenya, whose mandate is to register and license growers and to control production, extraction and marketing of pyrethrum in Kenya. Pyrethrum is also marketed through licensed marketing agencies based in Europe.

Pyrethrum products from Kenya are of high quality and in great demand in the world market. Most of the pyrethrum produced is for the export market with the local market consuming less than 2% and the rest exported mainly to the USA, Europe, Japan, Asia and Africa.

4.1. Export values

There were fluctuations in the value of exports of pyrethrum extracts from Kenya, mainly due to fluctuations in demand in the world market and increasing competition from inorganic products. The highest value of exports within the five-year period 1999-2003 was KShs 993 million in 2001 whilst the lowest was KShs 656 million in 1999. Values of Kenya's pyrethrum exports for the last 5 years are shown in chart 3 below.

Chart 3: Value of pyrethrum extract exports 1999-2003 (KShs millions)



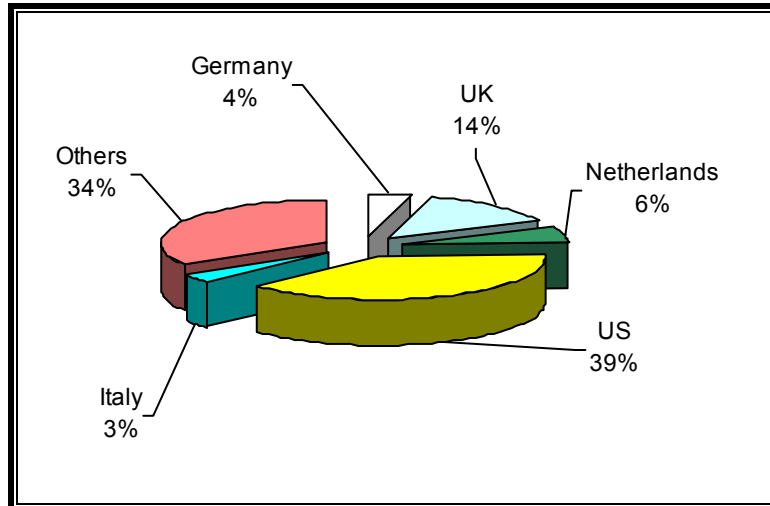
Source: Economic Survey 2004, by Central Bureau of Statistics, Ministry of Planning & National Development
**Provisional*

4.2. Export destinations

Kenya's main export destination for pyrethrum extracts is the US, which contributes 39% of the total exports followed by UK accounting for 14%. Other major export destinations are Netherlands, Germany and Italy as shown in chart 4 below.



Chart 4: Kenya's main pyrethrum extract exports markets, 2002

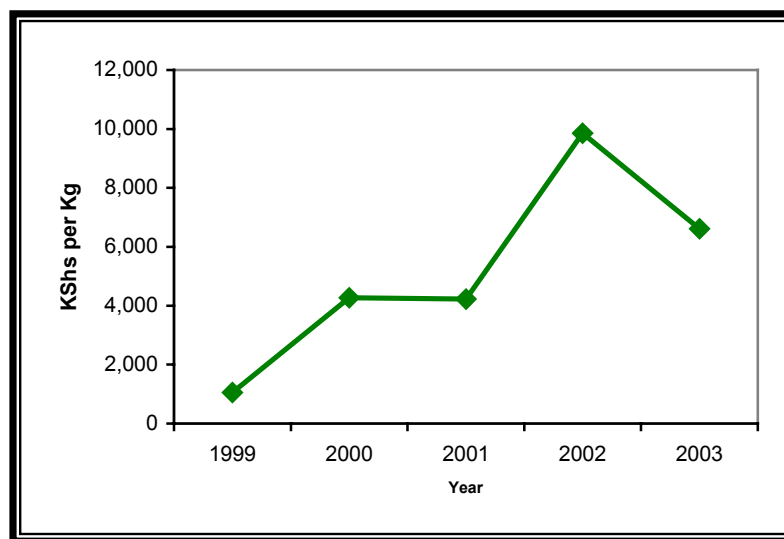


Source: Statistical Abstract 2003, by Central Bureau of Statistics Ministry of Planning & National Development

4.3. Export prices

The highest pricing of pyrethrum extract exports within the five-year period (1999-2003) was in 2002 when the prices hit KShs 9,852 per Kg, while 1999 prices were the lowest at KShs 1,053 per Kg.

Chart 5: Prices of Pyrethrum Extract Exports 1999-2003 (KShs/Kg)



Source: Economic Survey 2004 by Central Bureau of Statistics Source, Ministry of Planning & National Development

5. Legal & regulatory framework

Pyrethrum Board of Kenya (PBK) is a public body set up by the Pyrethrum Act (CAP 340), Laws of Kenya, under the Ministry of Agriculture. The board is the regulatory body for the pyrethrum industry with monopoly powers to:

- Register and license growers
- Control production, extraction and marketing of pyrethrum



The Board has a membership of 14, namely, 5 ministerial appointees including the chairman, 6 farmers' representatives appointed by the Minister for Agriculture and 3 government officers (the Permanent Secretary, Director of Agriculture and Commissioner of Co-operatives).

PBK offers various forms of technical assistance to Pyrethrum users that include:

- A technical service unit consisting of a modern insectary and facilities for testing of insecticide formulations is maintained at Nakuru under the auspices of the technical associate unit, the Pyrethrum Bureau.
- The scientific staff of Pyrethrum Bureau offer advice on insecticide formulations, registration requirements and related issues.
- The PBK maintains a World Standard Pyrethrum Extract (WSPE¹) that is distributed to customers and scientific institutions free of charge.
- Distribution services include technical services relating to insecticide formulations and dispensing systems, supply of ready to use technical actives, product labels and laboratory facilities and registration support services.

The board generates updated toxicological data on Pyrethrum for submission to various regulatory agencies all over the world. The data is generated through collaborative research work between the board and scientific organisations worldwide.

PBK products are registered in USA, Canada, all European countries, Japan, Australia, India, etc. Major data packages have been generated for registration and regulatory authorities that include.

- European Biocide Directive
- European Drug Master File
- United States Environmental Protection Agency (USA-EPA)
- United States Food & Drugs Agency (USA-FDA)
- European Agricultural Directive (91/414/EEC)
- International Co-operation on Harmonisation of Technical Requirements for Registration of Veterinary Products
- International Federation of Organic Agriculture Movement
- Soil Association

6. Reasons to invest in Kenya's Pyrethrum industry

Kenya is an ideal investment location for the pyrethrum industry as supported by various investor friendly factors that include:

Established Industry

Kenya is the world's largest producer of pyrethrum and is well established in the production and export of pyrethrum extracts. It also has established markets in US, Europe and Asia.

Lower production costs

Production cost of the pyrethrum flowers are considered negligible in terms of agricultural inputs hence it does not require substantial amounts of capital.

Good climatic conditions

Pyrethrum is well adapted to Kenyan conditions and does not require chemical inputs such as fertilizers, herbicides, etc. Pyrethrum is a botanical insecticide that is produced under organic conditions.

¹ WSPE – This is a Pyrethrum chemical standard developed by Pyrethrum Board of Kenya against which analysis are done. It's used to calibrate the quality of pyrethrum while carrying out analysis



Market availability

Kenyan Pyrethrum is consumed worldwide especially in North America, Europe, Australia and Asia. Pyrethrum Board of Kenya is therefore, well represented throughout the world.

The tropical climatic condition in Kenya is ideal for mosquitoes especially in the highlands and as a result of this, there is a huge local market potential for pyrethrum products that is yet to be fully exploited.

The above sector specific advantages are further supported by general investor friendly factors that include:

Availability of affordable labour

Kenya has an abundant supply of affordable labour, which is needed for any agricultural based industry.

Regulatory framework

The Pyrethrum Board of Kenya (PBK) whose main objective is to promote the growing and marketing of Pyrethrum regulates this important sub-sector.

Access to the regional market

Kenya's membership in regional trading bodies such as COMESA, African Union and the East African Community provides potential investors with a large potential market for their products.

Investor friendly arrangements

The Kenya government can guarantee investor friendly arrangements such as:

- the Export Processing Zones (EPZ) program which offers attractive incentives to export-oriented investors and EPZ Authority to provide one-stop-shop service for facilitation and aftercare
- the Investment Promotion Centre (IPC) to promote all other investment in Kenya including in Manufacturing under Bond (MUB) program
- the Tax Remission for Export Office (TREO), a program for intermittent imports for export production
- Generous investment and capital allowances
- Double taxation, bilateral investment and trade agreements

Investment insurance

Kenya as a member of MIGA (Multilateral Investment Guarantee Agency), ATIA (Africa Trade Insurance Agency) and ICSD (International Centre for Settlement of Investment Disputes) provides potential investors with insurance for their investment in Kenya against a wide range of non-commercial risks.

Strategic location

Located on the East African coast and having the port of Mombasa, Kenya is strategically located for investors wanting to access the East and Central African market. Kenya is also a regional hub for airlines allowing for easy access from and to any part of the world.

Good quality of life

Kenya hosts a number of international organizations and foreign embassies and provides very good and up to standard living conditions for foreign investors willing to reside in Kenya. With recognized international hotels, airports and entertainment centres.

Stable political climate

Kenya has been one of the very stable countries in Africa since independence. The country has had three presidents with smooth transition taking place from one government to the next and elections held regularly. This is also manifested in the number of international and regional organizations headquartered in Nairobi including the UN, IGAD etc.



7. Investment opportunities

As the leading producer of pyrethrum and pyrethrum extracts in the world, Kenya offers investors a varied range of investment opportunities some of which include the following:

Processing

With the availability of raw materials locally, Kenya provides potential investors with good investment opportunities in the processing of *pyrethrin* insecticides and pesticides. These are assured of ready markets both in Kenya and other tropical countries affected by mosquitoes and malaria, as well as those undertaking horticultural activities.

Seed production and plant propagation

Currently PBK is the main supplier of seeds to pyrethrum farmers. There exists an investment opportunity in the provision of seeds. This would ensure provision of quality seeds at affordable rates to the local and regional export markets i.e. Tanzania and Rwanda.

Investment in plantation

Potential investors can also invest in planting of pyrethrum crops, which doesn't require much capital, as pyrethrum is not a capital-intensive crop.

8. Useful contacts

Ministry of Agriculture & Rural Development
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Web: www.cbik.or.ke

9. Sources of information & glossary

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