TRADE AND PRODUCTION STATISTICS ON PYRETHRUM INDUSTRY

Introduction

Pyrethrum sub-sector in Kenya will remain relevant for many years as is still in wide use today and has remained unique in the history of chemical pest control. It has survived many centuries of use without it being rendered ineffective by insecticide resistance, restricted or banned by regulation agencies or attacked by anti-chemical groups because of health and environmental concerns. Four characteristics of pyrethrins account for this extraordinary history of use:

(a) **Rapid Knockdown**
Most formulators choose pyrethrins as a component in formulation because of its rapid insect knockdown effect on a wide variety of insect pests.

(b) **Its Natural**
Pyrethrins are naturally occurring compounds extracted from pyrethrum flowers. Natural pyrethrum provides a level of safety and environmental comforts to today’s general public.

(c) **Good Safety Profile**
Pyrethrum has low mammalian toxicity and it’s safe even to the user.

(d) **Non-Persistent**
Unlike other “hard pesticides”, pyrethrins lack residual activity. Thus this natural fast-acting, insecticide is often the active ingredient of choice for use in sensitive areas such as food handling establishments, food storage areas, vector control and on pets.

Pyrethrum Production in Kenya

In Kenya, pyrethrum is cultivated almost entirely by small-scale farmers. The crop is favored by cool temperatures, which occur in the higher altitude (1800-2900m). Higher temperatures and dry weather have negative effects on flower yields and pyrethrins content. Flower harvesting is selectively done by hand, and flowers dried and delivered to the factory for processing.

The Pyrethrum Board of Kenya, which has been the sole processor of pyrethrum in Kenya, is owned by the thousands of farmers in terms of stocks (based on the quantities of the flowers they supply). PBK mostly collects the flowers from the farmers or they are delivered to the factory where they are processed in different stages. The pyrethrum extract main product, used for making insecticide products, is standardized into 50% or 25% as a concentration level. The 25% extract is bulkier and less pure and is sold for $125 per kilogram, whereas the 50%, which can achieve more is sold for $250 per kg. PBK also sells crude extract to be used as Garden Sprays at $110/kg. The prices set by PBK are set through a selected committee which evaluates the price as per the supply received and is different from prices set by other pyrethrum producers worldwide. The farmers are paid as per the pyrethrin content of their crop which usually averages at 1.5 to 1.6 for most farmers. High and cold regions such as West Pokot have a good pyrethrin content, which sells better as compared to low lying or lake regions that have low pyrethrin contents.
Historically, pyrethrum has experienced cyclic production challenges where a season of high production is followed by season of production shortfalls. However PBK remains committed to meeting world needs for this valuable natural insecticide. To maintain our efforts, we will need continued support and goodwill of insecticide manufacturers and consumers. Although currently Pyrethrum Board of Kenya is experiencing a shortfall in its production targets, there is no doubt that pyrethrum still occupy the interest of our rural community, since there is a viable market that offers the farmer fair compensation for their efforts.

Currently PBK is striving to find ways of stabilizing production to minimize the occurrence of costly pyrethrum shortages, which have characterized the industry. For a country to sell their pyrethrum products, it must first register the product to prove safety of the product for clearance to sell both locally and internationally. This is despite the fact that registration is an expensive and stringent exercise for one to sell. The US is Kenya’s biggest market with over 50% of our exports sold there, around 30% in Europe, 15% in Asia/Pacific and the rest in other Africa countries and PBK is represented by its agents in all of these markets. However, our production is still very low at less around 500 Metric Tons annually although the government is assisting in the revival process. PBK has set a two year target of 4000 metric tons annually for them to break even.

The AFFA Bill 2012 that was passed by parliament and is to be implemented by the new government is meant to allow for licenses for other creation of new processing plants that should compete with PBK. This will give farmers the option of selling their crops to the highest bidder or the most preferable to them. Some of the regulations for exporting as stated in the Bill will be:

- An individual cannot operate as a dealer, processor or nursery operator unless that person is a holder of a current licence issued by the Pyrethrum Regulatory Authority for that purpose. Every licence specifies the premises upon which the business of pyrethrum production may be carried on. The licence is, unless earlier revoked, be valid for a period of five years from the date of issuance and there shall be fee payable for the issue of the licence, which is prescribed by the minister after consultations with the Board.
- Controlling the unfair competition created by the high importation of synthetic pesticides. To manage this, the 2011 Act imposes a 1% levy on any imported synthetic pesticides thus protecting the locally produced natural pyrethrum.
- The development of a national strategy: this strategy is developed by the stakeholders in partnership with the Government and outlines how to revitalize the pyrethrum sub-sector and position Kenya to take advantage of the global interest in, and demand for pyrethrum.
- Subject to section 21 a processor shall not be licensed to operate unless the processor’s catchment area is defined. A catchment area may have more than one processor and no person shall be denied a licence to operate merely on the ground that the person shares a catchment area, in whole or in part, with another processor.
- The Authority shall in performance of its functions provide access of intellectual property rights to a licensed processor at a fee to be prescribed by the Minister.
- Every pyrethrum grower shall register with a processor. Each processor shall keep or cause to be kept for statistical purposes, register of all pyrethrum growers registered with him.
under subsection indicating the name of the grower; the location, size and title number of
the land on which the pyrethrum is grown; and the variety of pyrethrum grown.

- A person shall not operate a commercial pyrethrum nursery, export, import, market or
  process pyrethrum or pyrethrum products unless that person has registered with the
  Authority in a manner provided for under the Rules made by the Minister under this Act.

**Pyrethrum Products Portfolio**

**(a) Technical Products**

Flowers received from farmers are processed to give rise to various products with the pale
extracts being the cash cows for the industry. The range of technical products include:

- **Pyrethrum Powder 1.3%**
- **Pyrethrum Grist**
- **Pyrethrum Fine Marc**
- **Pyrethrum Coarse Marc**
- **Vegetable Waxy Resins (VWR)**
- **Pyrethrum Extract Crude Oleo-Resin (OR) 25%**
- **Pyrethrum Extract Pale 25% w/w PBK**
- **Pyrethrum Extract Pale 50% w/w PBK**

(The first five are sold locally whereas the other three in bold are exported mostly to US, Europe
and Asia)

Powders are used in manufacture of mosquito coils and in formulation of stored product insect
controls. Pyrethrum marc (py-marc) which is a residue left over after pyrethrum flowers have
been extracted with a solvent is widely used as cattle feed. Though most of the pyrethrins will
have been extracted enough remains that make pyrethrum marc useful as cutworm bait and in
treating early attacks of maize stalk borer.

The pyrethrum extracts, which forms the major sales component is mainly sold to insecticide
formulators in America, Europe, Asia, and Africa for eventual making of consumer end-use
products.

Formulators of consumer end-use products in USA, Europe, Asia use pyrethrum to formulate
products such as:

- Ant and cockroach killers
- Flying insect killers (houseflies)
- Flea killer aerosol
- Indoor foggers
- Garden sprays
- Lice shampoos
- Pet shampoos
- Mosquito repellent creams
- Mosquito coils
- Veterinary products (for control of ticks, mites and tsetse flies)

(b) Locally manufactured Consumer End-Use Products

Currently PBK has six (6) value added products formulated with pyrethrum extract and registered in Kenya by the Pest Control Products Board (PCPB) and also by some regulatory authorities in countries like DRC, Sudan and Tanzania. These products target pests/vectors in key sectors of the economy such as Agriculture, Public and Animal Health. The products are:

(i) **PYAGRO™ 4EC**
A pyrethrum based product that targets pests of economic importance in horticultural crops.

(ii) **PYDUST™ 1% PYS**
A pyrethrum based powder that is effective against a wide range of pests that attack stored produce, including the dreaded larger grain Borer (*Prostephanus truncatus*). About 30% losses of grain in storage is due to insect pests, Agriculture being the mainstay of most of the African economies, such losses are untenable and could easily lead to starvation.

(iii) **PYMOS™ 0.6EC**
A pyrethrum product that is effective against adult mosquitoes when sprayed as indoor residual spray (IRS) or outdoors as a space spray against mosquito vectors of malaria and other diseases.

(iv) **PYNET™ 5EC**
A natural pyrethrum insecticide product used in treatment of bed-nets against mosquitoes to prevent malaria and other diseases. Insecticide Treated Net (ITN) is currently the main technology advocated by the World Health Organization (WHO) in malaria control and therefore the product will be critical in alleviation of suffering due to the disease.

(v) **PYLARVEX™ 0SEC**
A pyrethrum product that is aimed at the immature stages (larvae) of the vectors found at the breeding sites.

(vi) **PYTIX™ EC**
A product that is used as a spray against ticks and tsetse flies in animals that cause enormous loses in livestock production especially in Africa.
1. 11-Year Sales Figures (FY2001/02 – FY2011/12) by Market Segments.

<table>
<thead>
<tr>
<th>Year</th>
<th>AMERICAS (MT - 50% Equiv.)</th>
<th>EUROPE (MT - 50% Equiv.)</th>
<th>ASIA/PACIFIC (MT - 50% Equiv.)</th>
<th>AFRICA (MT - 50% Equiv.)</th>
<th>VOLUME TOTAL (MT - 50% Equiv.)</th>
<th>VALUE TOTAL (Million Kshs.)</th>
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<tbody>
<tr>
<td>2001/02</td>
<td>69.1</td>
<td>15.2</td>
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<td>1.2</td>
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<td>6.9</td>
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<td>1.7</td>
<td>10.0</td>
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<td>192.9</td>
<td>88.3</td>
<td>35.9</td>
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- MT: Metric Tons
2. PBK offers free extension services to all pyrethrum growers

Pyrethrum seed is subsidized such that 125kg is sold at Kshs. 60 to help reduce the cost of production. Other financial requirements are incurred by the grower. The grower also receives transport of the flowers from the field to the factory at a subsidized rate.

3. Pyrethrum is grown on an average of ½ acre of land by the small scale farmers.

Other large scale farmers grow the crop on between 20 – 50 acres. Mechanization is basically at land preparation. All the other operations are done manually.

**Pyrethrum Production in the last six years**

<table>
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<tr>
<th>Year</th>
<th>Production Figures</th>
<th>Acreage</th>
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Prices paid to farmers as pegged on their Pyrethrins contents:

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<tr>
<th>Pyrethrins Content</th>
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<th>2010-current</th>
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<td>0.9</td>
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Challenges of the industry

- Severe competition from other enterprises for farmers’ production resources
- Unpredictable/ unfavorable weather conditions
- High Factory maintenance costs
- Low pyrethrins recovery efficiency
- High energy costs
- Many operations are manual, hence increasing factory labour requirements
- Continued increase of cost of essential inputs and equipment

The growing regions include:

1. Nakuru
2. Bomet
3. Baringo
4. Narok
5. Uasin Gishu
6. Keiyo Marakwet
7. Pokot  
8. Nandi  
9. Nyandarua  
10. Kiambu  
11. Nyeri  
12. Meru  
13. Laikipia  
14. Kisii  
15. Kericho  
16. Trans Nzoia  
17. Mt. Elgon

**Competing crops include;**

Wheat  
Barley  
Maize  
Stevia  
Tea  
Potatoes  
Vegetables