

Sustainable Agricultural Livelihood Restoration, Rehabilitation and Resilience in Kenya Training Manual

3.3 MODULE 3 GUM (ARABIC AND RESINS) AND DOUM PALM

3.3.1 SUB-MODULE 1. GUM ARABIC AND GUM RESINS

Introduction

These are metabolic by-products of plant tissues either in normal course or as a result of disease injury to the bark or wood of certain plants. The uses of natural gums and resins in food, medicines and in varnishes or as protective coatings go back to very early times. The present-day uses of natural gums and resins are numerous and they are employed by a large number of manufacturing industries including food and pharmaceutical industries.

Gum Arabic resources:

These are small thorny deciduous trees also known as *Acacia Senegal*. It has dried exudation obtained from the stems and branches. They consist of *Acacia Senegal* varieties and/or *Vachellia seyal* red acacia which grow wild in the Arid and semi-Arid Lands (ASAL) counties in Kenya.



Thorny branches and florescence of the gum acacia. Photo courtesy of KALRO

In its natural state, it comes in a variety of shapes, colours and sizes. The colour of the gum may vary from colourless through different shades of yellow, amber, orange, red and dark brown.

Uses of gum Arabic

- Used in food industry,
- pharmaceutical industry
- printing, ceramics and textile industries

Resins

Resins are plant secretions that exude or ooze out from the bark of the trees and tend to harden on exposure to air.

- Myrrh- the gum-resin exudate from the stems of *Commiphora myrrha*. It oozes and hardens to form lumps of varying shapes and sizes of variable colour from red, brown to dark brown.

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Fully grown myrrh plant. (Source: <https://www.indiamart.com>)

Uses

- to make ink used in Quranic schools
- burning to repel snakes and offensive insects
- medicine for various ailments.
- Added in the manufacture of mainly essential oils, cosmetics, flavours, antiseptics and other medicines.

Commiphora holtiziana

- Hagar is oily resin exudate from the stems of *Commiphora holtiziana*. It oozes out and hardens to form lumps of various sizes and shapes with variable colour from yellow to dark brown or black.



Hagar plant (Source: <https://www.indiamart.com>)

Uses

- Hagar resin is used as acaricide against ticks, snake bites, scorpions, foot rot, mange and other livestock ailments.
- Herbal medicine
- essential oil in cosmetics.

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Boswellia neglecta

Frankincense is the exudate from the stems of *Boswellia neglecta*. It oozes out in small droplets that harden to form nodules or large lumps. It is of two types, black and white.



Hagar plant (Source: <https://www.indiamart.com>)

Uses

- used as chewing gum.
- burnt as incense, perfume and medicine for a wide range of ailments.
- used as essential oil in perfumery, cosmetic as well as flavour industries.

Harvesting of gums and resins

Harvesting is done manually by labour-intensive traditional methods of tapping. Tapping is carried out shortly after the rains when the trees begin to shade the leaves. Tapping and collection of gum is carried out following a specific pattern around mid-September up to the end of the dry season, usually June. Tapping involves the shaving of a very thin, i.e., 2mm deep and 4-8mm wide, external layer of the bark starting at 0.5m from the base of the stem using a hand tool, “Mingaf” for resins and “Sonke” for Gum Arabic. Once the 1st tapping is done, the 2nd tapping will take place after 30-40 days and involves a moderate widening of the wound, which was started during the 1st tapping. This tapping process will continue for three to four months until the wound has reached 4cm width. After each wounding/ incision, the exudates start to ooze and becomes dry in 2-3 weeks when it will be ready for collection. Collection of gums and resins from the wild is mainly done by women and herders during the dry months of the year.

Value addition for gums and resins

Post-harvest handling of gum involves, storage, cleaning, sorting, grading, packaging and labeling. Most of the gums and resins produced in Kenya are exported in raw form except for a small quantity of the total volume produced that is processed for essential oils.



Ministry of Agriculture and Livestock Development
State Department for Crop Development
P.O. Box 30028, Nairobi



Emergency Locust Response Program
P.O. Box 30028,
Nairobi



Kenya Agricultural & Livestock Research Organisation
P.O. Box 57811-00200,
Nairobi



The World Bank
P.O. Box 30577-00100
Nairobi

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Challenges

The key challenges for the sub-sector are:

- Poorly developed markets and marketing systems resulting in low prices at the producer level
- Destruction of gum and resin producing trees for firewood, fencing and fodder
- Insecurity in some of the producing areas interfere with gum collection, storage and trade
- Low production of gum Arabic due low adoption of best practices and land and tree tenure issues
- Low export volumes are partly due to lack of capacity to bulk enough quantities and lack of reliable suppliers
- Inadequate data on the resources, trade and marketing
- Lack of clear policies and strategies on development of gums and resins
- Inadequate incentives including access to credit by producers and traders
- Frequent and prolonged droughts affect gum production
- Un-regulated production system with collections from the wild resulting in unreliable supplies