

REQUEST FOR TECHNICAL ASSISTANCE

INDUSTRIALIZING AND COMMERCIALIZING Eritrea's Resources of Cactus Pear Plant (*Oppuntia ficus indica*) *for local & long distance markets*



Flower of red pulped fruit



Flower of orange pulped fruit



Cactus Pear Orchard - (*Oppuntia ficus indica*)
Terra Emni Cactus Pear Nursery, Eritrea

1. FIELD OF COOPERATION:

Industrializing & Commercializing Eritrea's Resources of Cactus Pear Plant (*Oppuntia ficus indica*), for both local and long distance markets.

2. APPLICANT : Government of Eritrea

3. EXECUTING AGENCY: Ministry of Agriculture, State of Eritrea and Ram Farms.

4. BACKGROUND AND PURPOSE OF THE REQUEST

4.1 Eritrea, situated along the stretch of the Red Sea and with various agro – ecological zones, is a country *naturally exposed to erratic* and *torrential rainfall patterns*. Subjected to a long span of dry season (*October through May*) and with a relatively short and sporadic rainy season (*June to September*), Eritrea's rainfed crop farming is cyclically faced with crop failures.

4.2 In view of Eritrea's erratic and torrential rainfall patterns, a major cause for crop failures, the search for alternative agriculture, less susceptible to changing weather conditions, is fundamental to Eritrea's efforts towards improving food security. The succulent '*cactus pear plant*' (*Oppuntia spp*) happens to be one of those *alternative crops suitable for Eritrea's environment* and which is less affected by the Country's characteristic erratic and torrential rains.

4.3 Even though "*Opuntia ficus indica*" (cactus pear) is a *naturalized crop in Eritrea*, introduced about 135 years ago, the plant is effectively acting as an *important ecological alternative for Eritrea's arid and semi-arid areas*. As the natural fruiting period for cactus pear is mainly during the months of June, July and September, the period during which highland farmers and their animals experience shortage of grain and forage, the cactus pear fruits, the cladodes and the fruit pills act as effective buffer crop, until the next harvest months of September - October.

4.4 The *economic importance of cactus pear plant* is increasingly being *recognized* among Eritreans and *by the Government of Eritrea*. The search for better cultural management, for ways and means of industrializing and commercializing this valuable and available resource is, therefore, of high priority and timely.

According to available statistics with the Ministry of Agriculture, State of Eritrea, the area under *cactus pear plant cover*, in the wild, is estimated at *around 10,000 hectares*. A rough estimate indicates that less than 25% of the existing cactus pear resource is currently being exploited. This is a

further indication of the need to search for effective means and methods exploiting Eritrea's Available huge resource.

4.5 In order for Eritrea *to fully exploit the available large resource of oppuntia, (& oleo spp)* and further develop its capacities to commercially produce, process and market cactus pear (& oleo spp) plant products and bi-products, *there is a need to transfer knowledge and technologies*, from countries such as Chile, Mexico, South Africa, Italy, Israel where the whole chain of development has been developed. Applied technologies and market requirements can also be thought through and from countries such as Japan which are buyers of cactus and oleo spp products.

5. TERMS OF REFERENCE FOR THE EXPERT

The expert is expected to execute the following, in collaboration with the Ministry of Agriculture of the State of Eritrea and Ram Farms.

- 5.1 Prepare detailed work plan for the duration of the project and based on the following *Terms of References*.
- 5.2 Assess the current environment of cactus pear vegetation cover and other unique biodiversity plants, such as olio spp, in Eritrea, based on varieties, agronomic practices, harvesting methods and various local uses.
- 5.3 Assess production and marketing constraints and based on the initial findings, identify and recommend list of applicable technologies to be transferred to Eritrea, from countries with well developed cactus plants (& oleo spp) production methods, processing and marketing systems of the products and bi-products, for both the local and the export markets.
- 5.4 Develop list of contacts with potential cactus pear, other cacti and oleo spp plants technology resources and with farms and firms which produce/manage, process, pack and market the following products and bi-products.
 - 5.4.1 Fresh cactus pear fruits
 - 5.4.2 Cactus pear fruit pulp.
 - 5.4.3 Cactus pear fruit/cladode marmalade; jelly and other related products.
 - 5.4.4 Cactus pear fruit juice
 - 5.4.5 Cactus pear alcoholic beverage or other alcoholic product(s)
 - 5.4.6 Cactus cladode vegetable pickles & other related products.
 - 5.4.7 Cosmetic and pharmaceutical products from cactus pear flowers, fruits, cladodes and from oleo spp plants.
 - 5.4.8 Cactus pear fruit seeds oil

- 5.5 Develop list of contacts with potential buyers (markets) and investors for Eritrea's cactus pear and oleo spp plant products, with a scheduled proposal on how to proceed with "*developing the producer – processor – seller – buyer relationships*".
- 5.6 Suggest an out line on short-medium-long term development plan for "industrializing and commercializing Eritreas Cactus pear plant resources (including oleo spp) for local and export markets.
- 5.7 Suggest and advice on the kind of training and institutions, Eritreans should have and visit, in order to gain practical exposure towards cactus pear orchards(& oleo spp plants) their management, plant propagation, processing, packing and marketing.

6. REQUIREMENT OF THE EXPERT

- 6.1 The expert is required to have wide knowledge and exposure in the development of cactus (& oleo spp) and related products, in particular the technologies related to production, processing and packing.
- 6.2 Specific knowledge and contacts on marketing of cactus pear plant (& oleo spp products and bi-products shall be of great need, as the project aims at "*industrializing and commercializing Eritrea's resources of cactus pear plant, for local and export markets*".

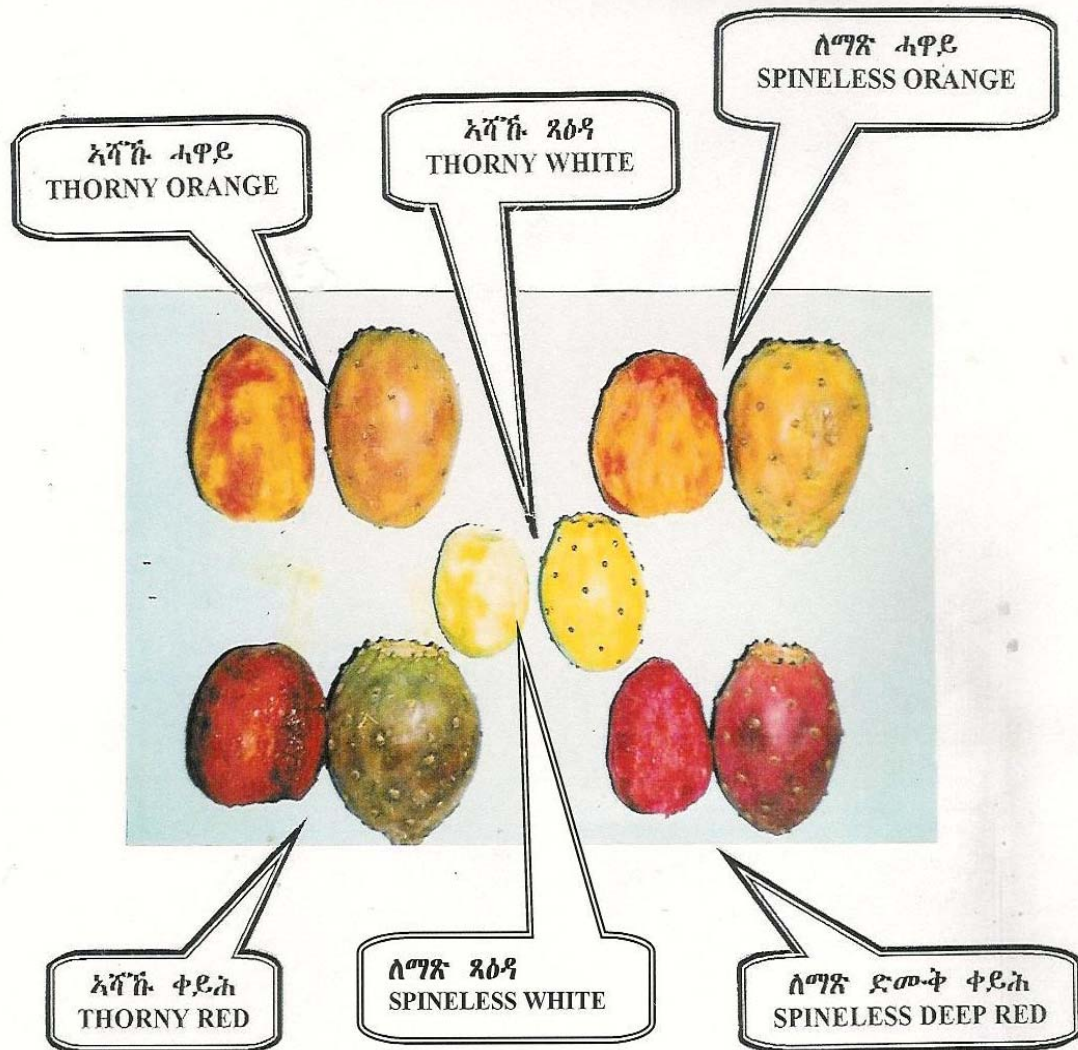
Personal exposure and experience in countries which produce, process and market cactus pear plants (& oleo spp) and products would be a fundamental requirement.

- 6.3 Work experience in African and Asian countries would be highly beneficial and preferred.

7. PERIOD OF THE EXPERT'S SERVICE

Six months, during 2007, would be a minimum and an ideal work period.

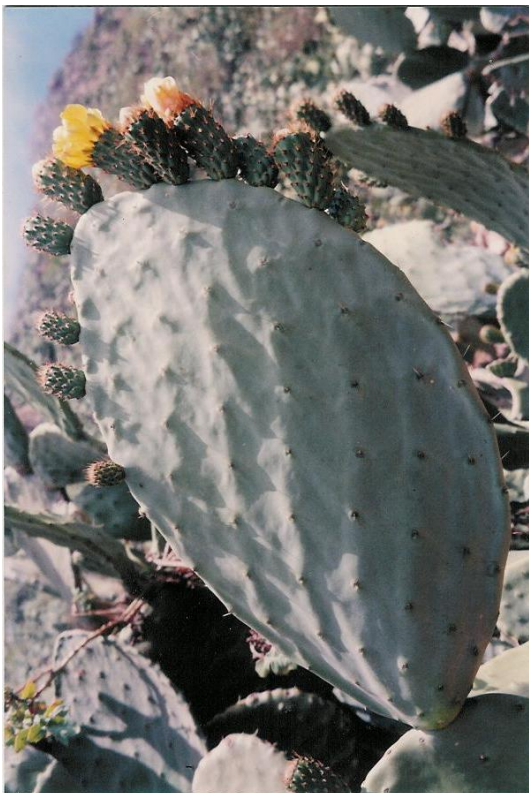
Cactus Pear Fruits



The Six Types of Cactus Pear Fruits
In Eritrea's Eastern Escarpments



**Flowering Stage - Cactus Pear
Central Highland - Eritrea (May)**



Spineless

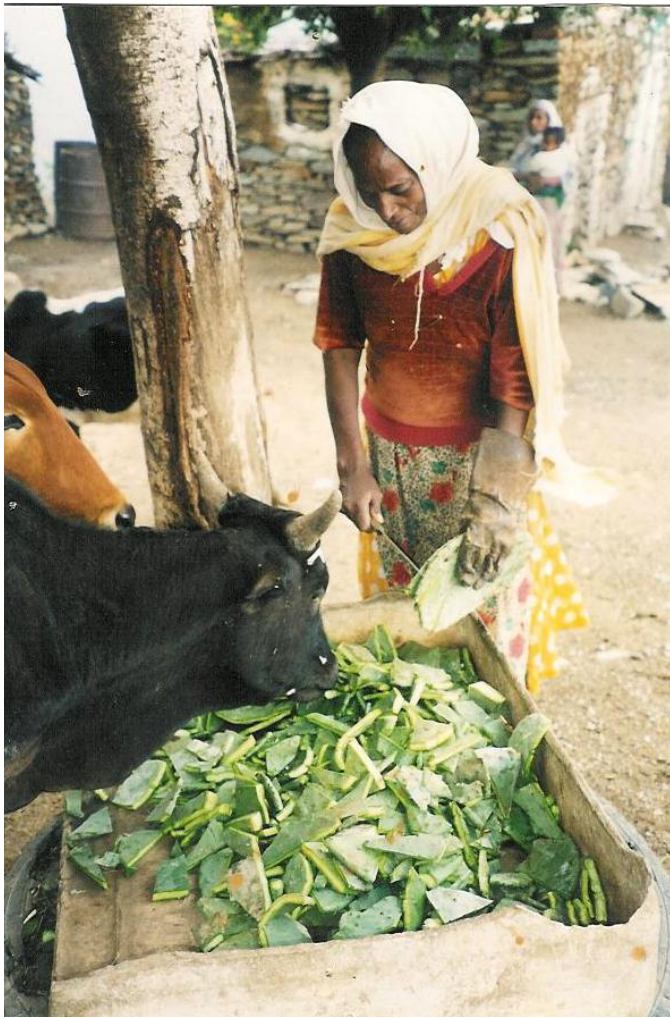


Spiney Cladode

Ripening Cactus Pear Fruit (June-July-August)



Road side Cactus Pear Fruit Market Eritrea



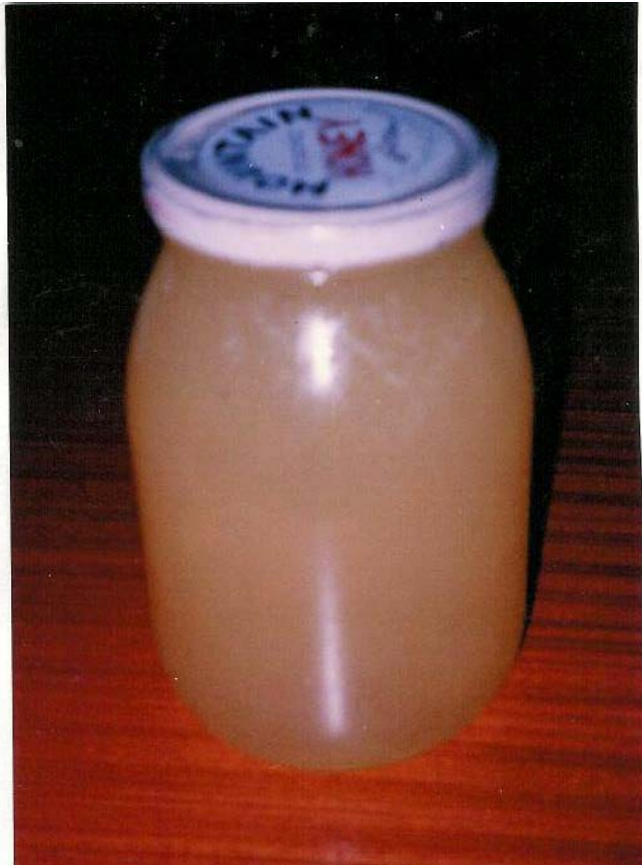
CACTUS CLADOSES AS FODDER



Easter Escarpments - Eritrea



Cactus Pear Flower Nectar



**MILD FLAVORED HONEY
FROM CACTUS PEAR FLOWERS**