

“Marula Resource Survey” (Pro nr. 45562)

Final report

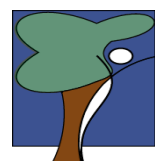
Prepared for:

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Introduction

This is a short report on the FAO funded “marula Resource Survey” Project (nr 45562), which forms part of the National Forestry Programme (NFP). It elaborates on the background, objectives, activities, outputs and a self-evaluation of the impact of the project.

The National Forestry Programme

The Directorate of Forestry (DOF) under the Ministry of Agriculture, Water and Forestry submitted a concept note in 2002 to the National Forest Programme Facility (the Facility), seeking assistance to implement the Forestry Strategic Plan (national forest programme or NFP). This concept note was approved by the Facility Steering Committee as a basis for a Partnership Agreement with the Republic of Namibia. In 2005, the Directorate of Forestry designated the Recipient Organization as the implementing agency for the Facility support. In 2006 NNF successfully coordinated a programme in support of the forestry strategic plan for Namibia through the launch of the Facility activities; implementing activities on awareness raising; increased participation of stakeholders in the national forest programme; improving forest management and utilization and knowledge management.

Background of the problem being addressed

Marula is one of the most important indigenous natural products in Namibia, especially the north-central regions, where it also plays an important cultural and livelihoods role. Over the past 15 years Namibia has made substantial progress with the commercialization of marula, especially marula oil for cosmetic use. Projects are currently underway to develop marula oil for food use in formal markets and to industrialise and upscale the processing of marula fruit for juice, functional food and natural flavor markets.

Despite the socio-economic importance of marula in Namibia, the resource base has only recently been studied in any detail as to its size, yield and commercial availability. A resource survey was conducted during the 2010 fruiting season, in response to serious commercial interest from a prominent international company which needed to know how much fruit would be available for processing before committing to an investment in processing capacity. This survey found that even under worst-case scenarios Namibia produces sufficient marula fruit to warrant an initial investment. In the longer run, however, additional work is required on the resource base to ensure that sufficient marula is available for local subsistence and informal market use, as well as a growing commercial marula industry. This project funded by the FAO through the NFP aimed to build on the work already done in order to set in motion subsequent work that will be required to make sure the supply of marula raw material keeps pace with the projected growing demand. From the onset a close cooperation with DoF was planned, with a view to ensuring that long-term institutional support is made available to marula harvesters and growers. It is envisaged that one result of this approach will be better collaboration between DoF and marula stakeholders, which will benefit the national forest programme process.

Objectives

The main objective of the intervention was improve the long-term management of Namibia's marula resource and open up new commercial opportunities for marula producers by improving knowledge management around the resource, institutionalizing support to marula harvesters and growers, and building national capacity to propagate and cultivate marula.

Activities and outputs

The project activities consisted of:

- A. The collection and desktop review of existing marula resource information
- B. The development of a GIS referenced marula resource database and interactive map
- C. The development of a methodology for a fruit yield survey
- D. The development and printing of propagation and cultivation material

The outputs included:

- A desktop review report on existing Namibian marula resource information
- A marula resource database and map
- A proposed methodology for monitoring fruit yields over the longer term
- Marula propagation and cultivation training material (1000 manuals and 250 posters)

The sections A-D report on the different activities and outputs in more detail.

A. The collection and desktop review of existing marula resource information

The marula desktop review intended to pull together and review the different sources of literature on the Marula (*sclerocarya birrea*) resource in Namibia. The following documents were reviewed and summarised in detail:

- Hangula, R.J.K (2000) – *Estimating the sex ratio of marula (sclerocarya birrea) in natural stands*. National Forestry Research Centre, Ministry of Environment and Tourism, Namibia
- Hangula-Mungandjela, R.J.K, M Aimanya (2001) – *Report on the field selection of marula (sclerocarya birrea) germplasm from Namibia for vegetative propagation*. Ministry of Environment and Tourism, Namibia
- Leakey, R, S. Shackleton, P. du Plessis, K. Pate, C. Lombard (2002) – *Characterization of phenotypic variation in marula (Sclerocarya birrea) fruits, nuts and kernels in South Africa and Namibia*. DFID/FRP Winners and Losers in Forest Product Commercialisation (ZF0140/R7795)
- Botelle, A, P. du Plessis, K. Pate, R Laamanen (2002) – *A survey of marula fruit yields in North-central Namibia*. CRIAA SA-DC for DFID/FRP Winners and Losers in Forest Product Commercialisation (ZF0140/R7795)

- Den Adel (S) (2010) – *Marula Resource Survey. Report on the Sclerocarya birrea tree population and the availability of its fruits in Northcentral Namibia*. Project report CRIAA SA-DC for the Indigenous Plant Task Team, Namibia
- Lushetile, K (2010) – *Inventory report of marula trees in Namibia (Draft version)*. National Forestry Research Centre (NFRC), Ministry of Agriculture, Water and Forestry, Namibia

The review also included a literature list of more generic sources of literature available describing or visualising aspects of the marula resource in Namibia, or providing useful sources of background information on the use of marula, and land use in North-central Namibia.

The literature review was finalised and circulated by the end of January 2011. It was also presented to the NFP steering committee on 20 April 2011, and accepted through e-mail a week after the meeting. It is attached to this report as annex A.

B. The development of a GIS referenced marula resource database and interactive map

The development of the GIS-referenced database and interactive map is important to visualise the available data, pull it together, and identify data gaps. The database map was to be made in such a way that it could be easily used and updated by DoF researchers and practitioners. The development of the interactive map and database has been outsourced to *MPA - Global Solutions*, a UK-based company experienced in this type of work. They were contracted to develop an open-source system with the following features:

- 1) An interactive map showing the location of the relevant assets on a suitable base map
- 2) The GIS map will link to an open-source database, or other suitable data management system. On the map, by clicking on the location of a given tree or other asset, the relevant information will be displayed on screen.
- 3) An interactive system that will allow the Client to add data to the database, and edit data (it may also be possible to upload larger data sets directly as long as they are appropriately formatted).
- 4) Ability to query and filter the data set as per variables that have been pre-defined.

The following open-source systems tools were used to establish this:

- QuantumGIS
- PostgreSQL
- PostGIS
- OSM (open street maps)
- Google Earth

Two data sets were provided by CRIAA SA-DC:

- Data from the marula resource study conducted by CRIAA SA-DC in 2010
- Data from the marula resource survey conducted by the National Forestry Research Centre in 2010

Both data sets had to be adapted to a format appropriate for use in QGIS

Some training was given via skype on how to use and update the map and database, and the product was presented and handed over to the NFP steering committee on the 16th of May. Although not part of the contract with MPA – Global Solutions, some training to Foresters at the National Forestry Research Centre is still ongoing.

Annex B contains a printed version of the report of the consultant, including some information on how to use the Quantum GIS program and how to upload the data files. The CD-rom contains all the datafiles that can be used once Quantum GIS has been successfully downloaded (free) and installed.

C. Development of a methodology for a fruit yield survey

Having a realistic figure on the yield of marula trees is imperative to estimate potential (commercial) marula production. Although limited data on marula fruit yield per tree is available, both marula resource surveys conducted in Namibia have focused on the available fruiting trees, rather than on the fruit yield. Furthermore, large annual variation of marula fruit yield has been experienced, and it is therefore important to conduct a fruit yield survey over a number of years, which has not been done. Because of the limited duration of this project it was not possible to conduct the survey over a number of seasons, but it was decided to develop a methodology for a long-term fruit yield survey, which could then be handed over to and institutionalized in the Department of Forestry.

A fruit yield survey methodology was developed, and a field trip was undertaken by the project coordinator and a Forester from the National Forestry Research Centre in early February. During the field trip all Forestry extension offices and research units in marula growing areas were visited, informed about the research, given all the necessary tools, and trained on the data collection.

Although the methodology for the marula fruit yield seemed feasible, the 2011 season has gathered little useful results. The main reason for this seems the lack of motivation of most field officers to carry out the survey, which in turn is the result of the lack of enforcement of the Department of Forestry (DoF). The main recommendation would therefore be for DoF to prioritise the marula fruit yield survey, conveying its importance to the field staff and allocating enough time for this activity in the working schedules of the forestry extension offices and research units.

Other reasons for the lack of valid data in 2011 included:

- The extreme flooding in the 2011 season, resulting in areas being inaccessible, as well as shifting priorities of all Government departments. This was beyond our control. Data showing that fruits are inaccessible during some years is valid as well, but inaccessible trees were not recorded in 2011.
- The gathering of data from “public” trees. It is therefore recommended to go through the methodology with all the participating offices again before the start of the next fruiting season.

It is furthermore recommended that a researcher from the National Forestry Research Centre in Okahandja is mandated to coordinate the marula fruit yield survey in the next few years.

Annex C contains the fruit yield survey methodology, including the data collection form and a database for the results.

D. The development and printing of propagation and cultivation material

As part of the management of the marula resource base it is important to build national capacity to propagate and cultivate marula. Some training in this field has been done by DoF, and has been well received by communities, but no training and promotion material was available on the subject. This project was to provide grafting training and promotion material to DoF, stimulating their future efforts in this field.

Initially grafting trials to test different grafting techniques were part of this project, but DoF could not conduct the trials due to the lack of proper rootstocks and scions. It was then decided with the National Forestry Research Centre to develop the grafting material (manuals and posters) on an existing technique that has been tested and used by Forestry researchers in Namibia. 1000 manuals and 250 posters were developed in close cooperation with the National Forestry Research Centre in Okahandja.

Already at the steering committee meeting on 20 April 2011 some changes and flexibility with regard to the budget were requested and agreed to. When the grafting trials could not take place it was agreed to buy grafting materials with the money that remained unspent on all the budget items. Grafting material (planting bags, knives, budding tape, and tree seal) can assist DoF in conducting propagation and cultivation training, and motivate the communities to participate. In total 27 sets of grafting material for 27 communities could be bought from the unspent funds. All training, promotion, and grafting material¹ has been delivered to the National Forestry Research Centre, which will disburse the material to different DoF extension offices.

Annex D contains files of the grafting manual and poster in Microsoft Publisher, as well as printed versions of the files.

Self-evaluation of the impact of the project

The specific objective of the project was to improve the long-term management of Namibia's marula resource, which in turn can help open up new commercial opportunities for marula producers. The activities and outputs of the project have contributed to this specific objective by improving knowledge management around the resource, providing a methodology and training to DoF field staff on further increasing knowledge around the marula resource base, and developing material to assist building national capacity to propagate and cultivate marula. Furthermore, a very good cooperation has been established especially with the National Forestry Research Centre in Okahandja, and it is believed that they will make good use of the project outputs provided to them.

¹ Material consists of 1000 manuals, 250 A2 posters, 27'000 planting bags, 54 pockets knives, 108 14mmx50m rolls of budding tape, and 162 tubes of tree seal.

For the National Forestry Programme, there are four matrix indicators for Monitoring and Evaluation, that were previously selected from the Appendix to the Facility Country Partnership Agreement. Below is a self-evaluation of the contributions of this project with regard to these NFP matrix indicators:

1. Recognition of customary laws and traditional rights related to forestry

This indicator was not specifically directed in the project, but customary laws and traditional rights were not disregarded in any way, and on a very simple level access and benefit issues were addressed in the developed cultivation and propagation material

2. Assessment of contributions of the forest sector to the economy, taking into account the multiple benefits of forest products and services.

Assessment of the contributions of marula to the economy -both with regard to the formal and the informal sector- has been clarified in the various reports produced in this project.

3. Integration of forestry in national poverty reduction strategies and strategies for sustainable development

The project has had a direct positive effect on this indicator. Increased knowledge with regard to the resource base, and ensuring that it is healthy and expanding (through better management, propagation and cultivation) will encourage investment in industrial-scale marula processing and increase the value added as well as producer incomes

4. Assessment of the role of forests in the national economy (including valuation of its contributions) and the linkages with central issues in other sector strategies

Although not specifically addressed, the value and contributions of marula in the national economy have been described in the various reports, and efforts to increase the resource base will get the importance of marula across to the communities that DoF is working with. Apart from poverty reduction, there are no clear linkages with central issues in other sector strategies