

**Welcome to  
 INP Market Bulletin**

In order to update indigenous natural products producers, service providers, traders, international buyers and other stakeholders, the Indigenous Natural Products (INP) Activity of Millennium Challenge Account Namibia (MCA-N) has as one of its goals the collation and dissemination of market-related information on indigenous natural products in Namibia. This is being done through the National Botanical Research Institute in the Ministry of Agriculture, Water and Forestry (MAWF), to ensure that INP stakeholders are kept informed regarding production volumes and values, and new developments in the market place.

This INP Market Bulletin serves as a medium for the dissemination of market-related information on indigenous natural products in Namibia. It is intended to provide an overview of production and exports and a review of market conditions for selected indigenous plant products.

We welcome any feedback on the type of information that should be made available and suggestions for improving the bulletin.



Marula fruit

**THE MARKET IN BRIEF**

*THE MARKET IN BRIEF* ..... 1

*MARKET UPDATES FOR DEVIL'S CLAW AND MARULA OIL* ..... 2

*THE IPTT: TEN YEARS OF SUPPORTING THE INDIGENOUS PLANT PRODUCTS INDUSTRY IN NAMIBIA* ..... 5

*THE SUCCESS STORY OF MEME EMILIA KAMBONDE: MARULA PRIMARY PRODUCERS* ..... 7

*FINISHED INDIGENOUS NATURAL PRODUCTS SHOWCASE* ..... 8

*THE 2011 OMAGONGO CULTURAL FESTIVAL IN OKALONGO* ..... 9

*UPDATE ON THE IMPLEMENTATION OF MCA-N INP INNOVATION FUND GRANTS* ..... 11

- *Optimal oil processing technology and competitiveness*
- *Inventory and screening of Namibian indigenous plant species for the development of new natural products*
- *Understanding marula fruit chemistry to enable innovation and commercialisation*

*SOUTH AFRICA'S BIOPROSPECTING, ACCESS AND BENEFIT SHARING REGULATIONS* ..... 13

*USEFUL RESOURCES FOR PROCESSORS AND EXPORTERS* ..... 15

**THE MARKET IN BRIEF**

**Devil's claw**

Namibia exported a total of 318 tonnes of devil's claw to the international markets from January to the end of October 2011. The amounts exported in both September and October this year were higher than exports in any other month for the last three years. Interestingly, for the first time a significant amount of devil's claw was exported to China. Overall, however, the anticipated export volume for 2011 appears to be similar to that for 2010 (336 tonnes).



Devil's claw organic inspection

### Hoodia

Despite the withdrawal of Unilever from the development of a hoodia “weight-loss” product, Namibia continues to export hoodia capsules to international markets. The total number of hoodia capsules exported to international markets declined by 52% in 2011, from 628 360 capsules (equivalent to 314 kg) in 2010 to 358 430 capsules (equivalent to 200 kg) in 2011. Australia was the foremost importer of Namibian hoodia capsules, followed by Europe and the USA. Altogether 71 export permits for hoodia products (capsules, powder, gel and drops) consignments were issued by the Ministry of Environment and Tourism (MET) in 2011. It should be noted that significant quantities of hoodia powder are exported to South Africa, where it is sterilised and stored, and not returned to Namibia but rather exported directly from South Africa. The quantities of hoodia powder exported from Namibia may therefore not be a true reflection of actual sales.



Indigenous natural products

### Marula

The international demand for marula oil for cosmetics applications continues to be firm; 6 080 kg of oil had been exported by the end of November 2011, generating close to N\$920 000. The prices paid to the Eudafano Women’s Cooperative (EWC) harvesters increased to N\$21/kg in 2011, from N\$18/kg in 2010.



Kalahari melon

A total of 1 536 kg of marula food oil was produced by EWC during 2011. The marula food oil is sold either at the factory or at trade exhibitions in Namibia.

### Ximenia

Total demand for crude ximenia (cosmetics) oil has increased slightly for 2011. A total of 3 150 kg of oil had been exported by mid-2011, compared to 3 046 kg for the corresponding period in 2010. The oil was processed from 14.4 tonnes of ximenia kernels harvested during the 2010 production year. There are over 300 harvesters involved in ximenia kernel production. A higher price was paid to the harvesters in 2011 than in 2010; the 16.5 tonnes of kernels harvested generated an income of N\$140 250 in 2011, compared to N\$108 150 from 14.4 tonnes in 2010. The main importer of ximenia oil remains in France.

### Kalahari melon seed

The supply of Kalahari melon seed (KMS) has been further scaled down as a result of the continuing weakness of demand in the international market over the past few years. During 2011, a total of only 380 kg of oil, valued at N\$40 000, was exported.

### Commiphora

No exports were recorded for the “perfume plant” in 2011. This was due to accumulated stock and ongoing negotiations and market development with the international buyers. It is anticipated that an agreement will be finalised by the end of 2011. Once the agreement is in place, exports of commiphora products to international markets should resume.

A pleasing development is that the still at Opuwo, which was inaugurated at the beginning of 2011, is now fully operational, and is producing substantial volumes of essential oils.

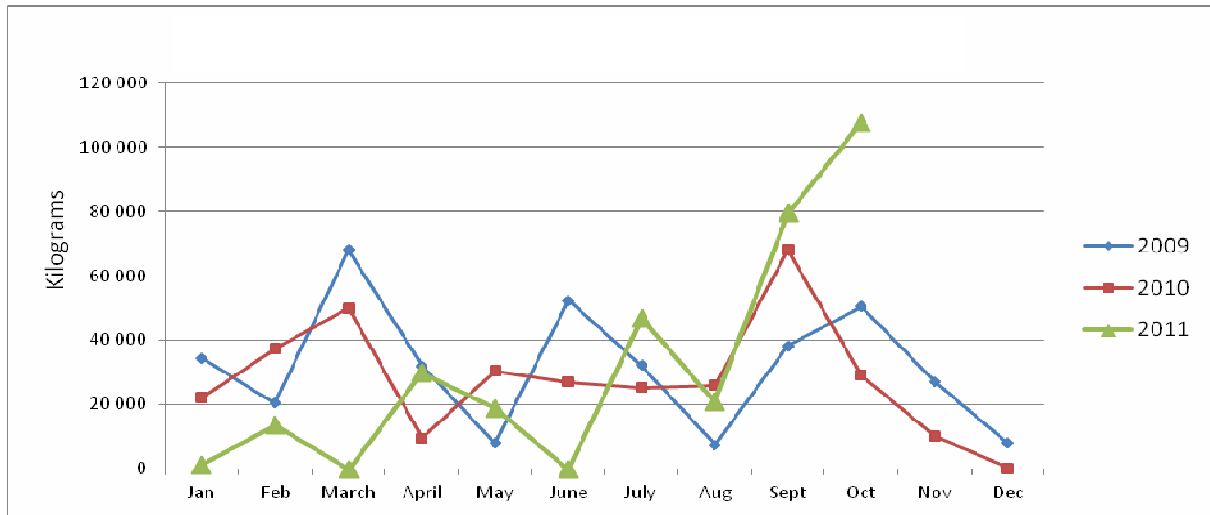
### Estimated exported quantities of indigenous natural products (2011)

Product	Total production (kg)
Marula oil	6 080
Ximenia oil	3 150
Commiphora resin	0
Hoodia dried materials	200
Devil’s claw dried materials (October 2011)	318 000
Kalahari melon seed oil	380

**MARKET UPDATE: DEVIL'S CLAW**

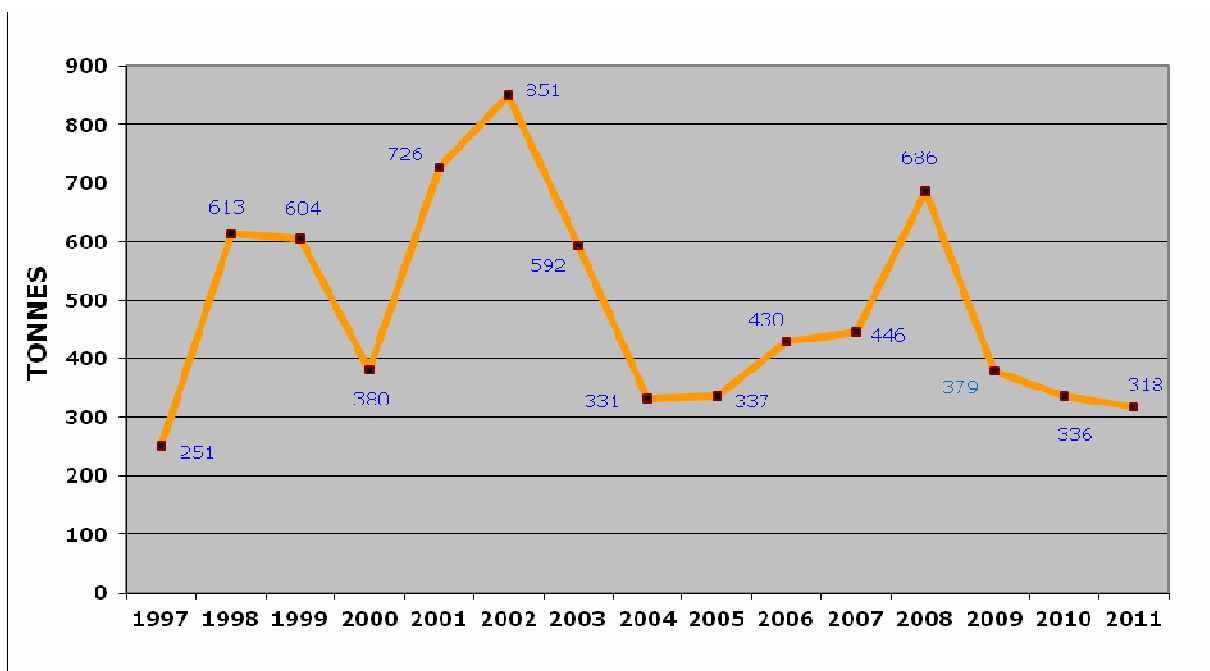
The annual harvesting season for devil's claw is from March to October. In 2011, due mainly to the prolonged rainy season, harvesting commenced later than usual. This resulted in a shortage of raw materials at the beginning of the season, and consequently in an increase in devil's claw sourced from Zambia and Angola. Much of this material was in fact illegally imported into Namibia.

The demand for organic devil's claw is relatively strong, and a new Fair Trade initiative for organic devil's claw is being finalised. In addition, efforts to negotiate contracts with important European Union (EU) importers for traceable devil's claw have been successful. The challenge will be for traders to continue to source sufficient quantities of traceable devil's claw to meet the demand.



**Namibian devil's claw exports by month (2009/2010/2011) (MET data)**

The main markets for devil's claw this year were France, Italy, Germany, China and Brazil. China and Brazil are developing markets which procured increased volumes of devil's claw. Furthermore, it seems that the traditional devil's claw markets in Europe have not been negatively affected by the new regulations (the Traditional Herbal Medicinal Products Directive) which came into force in the EU in April 2011, and that the demand for devil's claw in these markets continues to be substantial.



**Namibian devil's claw exports (1997 – October 2011) (MET data)**

Much has been done to build capacity within producer and processor organisations, mainly through the MCA-N Primary Production Improvement Grants and the support given by the MCA-N-contracted service providers, led by the Natural Resources Institute and comprising local NGO counterparts (CRIAA SA-DC, IRDNC and NNF).

Since January 2011, the MET has issued 32 devil's claw export permits; 73 general permits (i.e. buy and sell permits); and two import permits for dried devil's claw (one applicable to Botswana and one to Zambia). Buy and sell permits were issued for all regions except Omusati Region, with Caprivi, Kavango, Otjozondupa and Omaheke regions accounting for the highest number of permits.

## MARKET UPDATE: MARULA OIL

The international demand for marula oil for cosmetics applications continues to grow, with the single largest buyer accounting for the increase. The demand forecast for 2012 looks firm, but might not be entirely met in the first half of 2012 because of the below-average production of marula kernels in 2011 due to the floods in northern Namibia.

At the same time, Eudafano Women's Cooperative (EWC) is continuing to explore other market opportunities. Commercial inquiries for small quantities have been received from potential international buyers; while this is a positive trend, it remains expensive to ship small quantities to different buyers.



EWC marula food oil



Traditional marula oil processing

On the local front, working closely with CRIAA SA-DC, and with financial assistance from German Development Cooperation (GIZ) and the Indigenous Plants Task Team (IPTT) for research and product development, EWC is in the process of launching a new product, marula food oil. This product has been successfully formulated and is ready to be launched in the local market. The EWC staff members have been trained in how to process marula food oil, and are now well equipped to take over full production once the product starts selling in many outlets.

In 2010, the EWC factory used 3 775 kg of marula kernels, specifically sourced from the 18 EWC associations, for marula food oil. From these kernels, 1 536 kg of oil was produced. The product is currently sold from the EWC factory in Ondangwa.

## **THE INDIGENOUS PLANTS TASK TEAM: TEN YEARS OF SUPPORTING THE INDIGENOUS PLANT PRODUCTS INDUSTRY IN NAMIBIA**

---

For 10 years, the IPTT has supported the indigenous natural products industry in Namibia. This article looks at its activities and successes over that time, as well as at some of the challenges facing the industry.

The IPTT is a government-mandated, Ministry of Agriculture, Water and Forestry-led multi-stakeholder task team for the indigenous plants products industry in Namibia. It was originally constituted as the Indigenous Fruits Task Team following the first Promotion of Indigenous Fruits Workshop held in April 2000, with the aim of developing a co-ordinated strategy for the implementation of an economically sustainable promotion programme for indigenous fruit products in Namibia. This mandate was later extended to include all indigenous plants, hence its renaming as the Indigenous Plants Task Team. To fulfil its mandate, it has an agreed general strategy and an annual action plan, the development and implementation of which is guided by flexible, market-driven responses. The IPTT further achieves its objectives by acting as a focal point for the indigenous plants industry in Namibia, providing information, advice and technical inputs, making linkages between the different players in the industry, and providing funds to support specific planned activities.

The IPTT receives annual core funding from the MAWF, as well as from various other donor sources, to support its developmental and co-ordination activities. The IPTT adopts a “pipeline” approach, in which selected resources with the clearest product development potential are prioritised. A species priority list is periodically reviewed to ensure that the pipeline approach remains viable, and that adequate resources are allocated to appropriately defined areas and/or activities. This flexible strategy has allowed the IPTT to allocate its limited funds and expertise to those resources and products requiring financial and/or technical support when they are needed to move their development forward.

The IPTT has received over N\$7 million since 2001 for its activities, mainly contributed by the Namibian Government and some donors, notably the Useful Plant Development Project, GIZ, the National Agricultural Support Services Programme and MCA-N.

The past decade has seen steady growth in the number of indigenous plant products reaching markets in various forms, with a number of others showing promising signs of progress. The leading indigenous plant resources that have received support from the IPTT in terms of research, product development and securing a place in international and/or local markets include marula oil, KMS oil, ximenia oil, hoodia, and, to a lesser extent, commi-

phora essential oil, manketti, devil’s claw, !nara seed oil, baobab and indigenous green leafy vegetables. Other indigenous plants currently showing development potential include mopane, sarcocaulon (bushman’s candle), marama bean and moringa.



Sarcocaulon (bushman’s candle)

Below are examples of products derived from indigenous plant resources that have been developed primarily for international markets (some also have a national and regional focus), with support from the IPTT.

### **Marula food oil**

With funding from GIZ, and with support from the IPTT, CRIAA SA-DC (in cooperation with EWC) has conducted research and processing trials to develop a marula food oil product. This development is now at an advanced stage, and it is expected that it will soon be launched on the local market. Marula food oil is already sold from the EWC premises, and the success of the project will be plain to see once marula food oil is widely available in selected Namibian retail outlets.

### **Marula juice and pulp**

During the harvesting season, EWC processes marula juice (*omagongo*) for sale on the local market.

### **Marula oil for cosmetics**

Marula oil is currently exported to a company in the UK for use in their cosmetics formulations (although this activity is not directly supported by the IPTT). Between 2008 and 2010, a total of 15 661 kg of marula oil, with a value of N\$2.8 million, was exported. Marula oil production takes place at the EWC’s factory, situated in Ondangwa. EWC, whose marula supply network includes some 5 000 thousands rural women, is now playing a leading role in the production and export of marula oil to the international market.

### **Kalahari melon seed oil**

Oil pressed from KMS was traditionally used as a skin moisturiser for protection against the sun. It has been harvested for commercial purposes in the north-central regions, and is processed by EWC, whose KMS supply network includes 1 300 rural producers. The oil is exported to a number of cosmetics companies for use in products that moisturise, regenerate and invigorate the skin. More than 1 389 kg of oil, valued at N\$1.5 million, were exported from 2008 to 2010.

In an attempt to increase production and income from KMS oil sales, the IPTT has given financial support for breeding trials aimed at selecting an improved variety with improved agronomic features for small-holder producers, higher oil content and superior oil quality.

### **Ximenia oil for cosmetics**

Ximenia occurs in the northern and central regions of Namibia. Ximenia oil is extracted from the kernels. It is harvested in the north-central regions, and has been exported for a number of years. The oil has moisturising properties and is an effective anti-ageing treatment for dry skin. The main international market for ximenia oil is in France, where demand currently exceeds supply. This has prompted efforts to source raw materials from other regions in Namibia, with conservancies in the north-eastern regions being especially targeted. Between 2008 and 2010, a total of 8 830 kg of oil was exported, generating an income of almost N\$0.5 million for over 300 primary producers.

### **Commiphora**

The most commercially important commiphora species, *Commiphora wildii* (omumbiri), is found in Kunene Region. The resin from the plant is used by the Himba people as a perfume. Commercial harvesting of commiphora, which began in 2007, is



Himba women harvesting *Commiphora wildii* resin

conducted through the communal conservancies in the region. The market for commiphora is international; demand for commiphora resin has thus far been steadily growing, and future prospects

look bright, particularly for the extracted essential oil. Representatives from interested companies have visited commiphora production sites in Kunene Region, showing healthy interest in the product. Research is also underway to establish the viability of developing a commiphora resinoid. Between 2008 and 2010, a total of 14 193 kg of resin, with a value of N\$709 191, was exported.

### **Hoodia**

*Hoodia gordonii* occurs mainly in the southern parts of Namibia. It is used by the San and Nama people to treat illnesses such as high blood pressure, diabetes and gout, and has also been linked to the suppression of hunger during times of hardship. This latter property attracted the attention of international companies interested in a developing dietary product. However, this project has been dropped by Unilever, who cited safety and efficacy concerns as the reason for this step. The future for this application for hoodia is thus unclear. Namibia has an established production network, and there are limited exports of powders, dried slices and capsules for the herbal supplement market.

### **Devil's claw**

Namibia is the lead producer of devil's claw worldwide. Devil's claw is commercially harvested mainly in Kavango, Caprivi, Otjozondjupa and Omaheke regions. Its main uses are as an anti-inflammatory, and as a treatment for arthritis, joint pain, muscle aches and digestive disorders. Namibia exports mainly to Germany and other European countries, but also to the USA, South Africa and China. Between 2008 and 2010, Namibia exported 1 352 tonnes of devil's claw, valued at N\$43 million. More than 2 000 primary producers are involved in the harvesting of devil's claw.

### **Main challenges**

The indigenous plant products sector and the IPTT face a number of challenges which affect the individual resources and products in different ways. The global economic downturn has been blamed for a significant drop in the international price for devil's claw in 2008, and also for the low 2009 exports of marula oil and ximenia, which had a severe negative impact on local harvesters.

Other challenges come from closer to home. Many of the IPTT's targeted resources, such as ximenia and marula, are shared throughout much of southern Africa. Other countries often have far larger resource bases of these plants, and their greater potential for economies of scale constitutes an additional challenge that must be met if Namibia is to remain competitive in international markets and successfully promote economic opportunities based on these indigenous plant resources. Other challenges include technical capacity constraints, the unsustainable

harvesting of certain resources, the exacting standards of hygiene and quality that must be met for access to international markets, technological issues associated with product processing and value addition, and ensuring that benefits from product development are felt at community level.

### **The future of the IPTT**

Much has changed with regard to the indigenous plants products industry over the past decade, and the evidence suggests that there is much potential for further sustained growth in the industry. Namibia

is well positioned to benefit from this growth. The growth in the number of conservancies, the establishment of the Namibia Organic Association in 2009, and the specific investment by the MCA-N in the indigenous plants products industry all confirm this. It is clear that the IPTT too must evolve within this shifting landscape, so that it can remain relevant to stakeholders and provide guidance for the industry. To this end, an organisational review of the IPTT was conducted in 2010 (with funding from MCA-N), resulting in a number of recommendations on its structure and modus operandi.

## **THE SUCCESS STORY OF MEME EMILIA KAMBONDE: MARULA PRIMARY PRODUCERS**

Just like many other women in north-central Namibia, Meme Emilia Kambode, a pensioner from Olukango village in Oshana Region, was taught how to process marula oil in the traditional manner by her mother. Now a mother herself, with 15 people living in her house, she earns a stable income with which she supports her large family by processing and trading in marula kernels. She started selling marula products 40 years ago, but because the market was limited and every household in the north made their own marula oil, she did not make any money out of it. Sometimes she would come home without having sold anything. Then ten years ago, she became a marula primary producer for EWC, and today she is happy to be a member, and she is proud of what EWC has developed into over the years.

Meme Emilia has six marula trees in her mahangu field, and she shares the marula fruit with her neighbours. Along with her crops and animals, the marula trade is a source of livelihood for her. In addition to harvesting kernels, she also produces marula beer

and marula juice, which she sells in the village.

Meme Emilia sells an average of five bags of kernels, each weighing 20 kg, to EWC every year. In 2010, EWC paid her N\$18/kg for the kernels, but this was raised to N\$21/kg for the 2011 season. Marula harvesters generally make between N\$400 and N\$600 per month. EWC usually collects kernels from the village on a monthly basis. This year, however, because of the heavy flooding in the north and the poor fruiting season for marula trees, EWC only started collecting kernels in July.

Despite these setbacks, Meme Emilia managed to process her marula kernels and was able to trade. She explained that none of the young girls help her with processing the marula – she does the work alone. However, she is highly motivated because she depends on the income she receives through the marula trade to pay for school fees, school uniforms and hospital fees for her children and grandchildren, and to buy food and other household items.

Meme Emilia feels that the benefit of being a member goes beyond the money she earns. She knows that her hard work will bring a pay cheque to complement the pension she receives from the government, and this enables her to be more independent and confident. Her life has changed for the better because she has a reliable income. Meme Emilia explains that marula kernels have traditionally been used to produce marula food oil for the family. Her husband fully appreciates the importance of the income she receives, however, so he does not complain when there is no marula food oil for the family.

Meme Emilia does not know exactly what the kernels collected by EWC are used for, but she has seen some finished products at the factory, like soap and lip balm made with marula. She has heard that there will soon also be marula food oil.

Her wish is that that EWC continues with its good work, so that future generations of members can also benefit from the income they will receive.



Meme Emilia Kambonde and Meme Toini Paulus

## FINISHED INDIGENOUS NATURAL PRODUCTS SHOWCASE

In collaboration with Phytotrade Africa, MCA-N organised a finished products showcase which was held on 15 September 2011 at the Arebbusch Travel Lodge in Windhoek. The main aim was for businesses and individuals working with natural products in southern Africa, and particularly those based in Namibia, to meet informally, exhibit products and share information about product processing, packaging, branding and marketing. In addition, the showcase was also a good opportunity for stakeholders to get first-hand information on what products are available on the local market, and who is producing what in the sector, in order to gauge where future efforts should be focussed to optimally develop the sector.

Products on display included finished products containing ingredients sourced from Namibia and regional producers, but manufactured by international cosmetic companies, and those manufactured by local entrepreneurs containing ingredients such as marula, ximenia, commiphora, KMS, devil's claw, Inara, baobab, rooibos and hoodia. The showcase was well attended by stakeholders who are directly involved in the indigenous natural products sector, and by individuals with an interest in the sector.

For the benefit of those who did not have the opportunity to visit the MCA-Namibia showcase, the pictures below give an overview of the products that were exhibited.





## THE 2011 OMAGONGO CULTURAL FESTIVAL IN OKALONGO

In July 2011, MCA-N supported the annual Omagongo Cultural Festival in Okalongo, which falls under the Ombadja Traditional Authority in Omusati Region. MCA-N did this because marula is a focal species for the MCA-N INP Activity, and because MCA-N also supports the PPOs that utilise the resource to develop products. The Namibian Government has recognised the economic potential of the marula tree and other indigenous natural products such as ximenia, manketti, devil's claw and hoodia because of the crucial role they play in the lives of many communities living in rural Namibia.

### Background to the Omagongo Cultural Festival

Marula trees and products derived from them have been an important part of the local economies of the Owambo people for many generations. Traditionally, the chief of a particular tribe would open the harvest season for his subjects. The first crop available was the fruit of the marula tree, from which a mildly intoxicating drink, *omagongo*, or marula wine, was made. The various Owambo tribes had different ways of celebrating the marula season. In some, the king would be the first to drink the *omagongo* to mark the onset of the productive season, before any grain crops had matured; in others, the chief drank the first *omagongo* to formally open the marula season itself. In the latter case, the eight kings would invite their subjects to a nation-wide celebration lasting for several weeks. In addition, private ceremonies would also be held at individual homesteads.

### The processing of *omagongo*

Traditionally, making *omagongo* is the women's prerogative, while drinking it and "making merry" is the men's: "*Omeme takolo otate takolwa*". Every afternoon after a hard day's work in the fields, the women gather under a tree and make *omagongo* while socialising, singing and joking. A cow horn is used to puncture the leathery skin of the fruit. The juice is squeezed out into one bucket or clay pot, and the remaining kernels and pulp goes into another container to make a non-alcoholic drink, which is reserved for the women and children. The *omagongo* juice is then simply left to ferment into an alcoholic drink. The marula season, during which *omagongo* is plentiful, is from February to March, but *omagongo* can be stored for up to a year. Traditionally, this has been done by storing it underground in clay pots or

bottles, and regularly wetting the surrounding soil; nowadays, it can also be stored in a fridge, or frozen.

### *Omagongo* as a source of income

The capacity to prolong the shelf life of *omagongo* has led to the development of an informal trade in the urban areas of Namibia; the *omagongo* tradition has thus been transformed into an income-generating trade activity for women in rural communities.

Although *omagongo* is not yet sold in the formal markets, trade in *omagongo* in urban areas is now quite substantial, and many women travel from rural Namibia to Windhoek to sell *omagongo* in Katutura's informal markets. Tuliki, a Windhoek *omagongo* seller, says that during the marula season, she usually receives about 125 litres of *omagongo* from her mother to sell to relatives and acquaintances in Windhoek. Depending on the quality, prices for *omagongo* range from about N\$15 to about N\$20 per litre.



The *omagongo* is brought in at the opening of the festival

### Transformation of the traditional *omagongo* festival

Since Namibia's Independence in 1990, the celebration of the marula harvest has been adapted for public performance. The traditional marula festival, so symbolic of historical cultural practices, has recently been transformed by traditional leaders into a yearly cultural event among the Owambo tribal groups, with the aim of restoring aspects of Owambo tradition and culture, and of promoting cultural integration. At the urging of the Founding President, Dr Sam Nujoma, The Omagongo Cultural Festival was established with a view to forging unity by bringing the sometimes divided traditional authorities together to share their various cultures, values and norms. The hosting of the Omagongo Cultural Festival therefore rotates among the eight Owambo Traditional Authorities.



Pouring *omagongo* into a traditional drinking cup

The Ombadja Traditional Authority hosted the 2011 Omagongo Cultural Festival, with the MET contributing game meat. To complement government and MCA-N support, the hosting traditional authority also raised funds to cover costs. The main activities of the day were drinking *omagongo*, eating traditional food, and performing traditional dances.

This year, MCA-N brought a new flavour to the festival by introducing a competition. Four districts within the Ombadja Traditional Authority, namely Omutundungu, Onandjaba, Ondudu and Onembaba, took part in the competition. Each of these districts entered a small pot of *omagongo* to be assessed for

quality. The winning district and the runner up each received a marula fruit press; the third placed district received a cooler box; and the fourth placed district received N\$100 donated by the Governor of Omusati Region, Hon. Sophia Shanigwa. Before the festival, the organising committee decided that the first- and second-placed districts should keep and maintain the marula presses, but that they should share them with the other two districts. The modern marula presses extract the marula fruit juice much faster and more efficiently than other methods, providing a higher juice yield. The donation of modern marula presses to the communities thus underscored MCA-N's goal of promoting innovation in order to improve efficiency and expand on the income-generating opportunities of rural women in Namibia.

### A word from the winners

The winners of the two presses expressed their appreciation for MCA-N's efforts to promote a more efficient marula production process, as it will help them to produce more marula juice under improved hygienic conditions. Moreover, this process will enable women to increase marula production and sell the surplus marula to generate extra income. Marula food oil is a new product line produced by EWC in Ondangwa, and it will soon be introduced to the market.



The winners of the *omagongo* competition

MCA-N also contributed clay pots (*omatiti*), baskets (*omalilo*), and marula food oil (*odjove*). The main objective was to link the old and the new in the

home ground of traditional makers of marula food oil, by using the traditional *omatiti* and *omalilo* to introduce the marula food oil produced with modern technology. The clay pots and the traditional baskets were presented as gifts to the invited guests. A bottle of marula food oil was placed inside each clay pot; this was done in recognition of customary practice, in which an Owambo woman would serve her visitors soup garnished with marula food oil in a clay pot, and mahangu porridge placed in a traditional basket. One-hundred-and-fifty bottles of marula oil, 150 clay pots and 50 baskets were donated by MCA-N and distributed at the festival.

The marula tree is the tree of the year, and the MAWF donated 50 grafted marula seedlings to the Ombadja Traditional Authority. The Directorate of Forestry also planted marula trees at the homestead of the leader of the Ombadja people, Chief Mathias Walaula, during the festival. The planting of indigenous trees dates back to the 2003 Omagongo Cultural Festival, at which then President of Namibia, Dr Sam Nujoma, called on communities to plant many indigenous trees so that they can provide the country with fruit, shade and timber, while also countering the desertification which threatens many areas in Namibia.

## **MCA-N INP INNOVATION FUND: UPDATE ON THE IMPLEMENTATION OF SUPPORTED PROJECTS**

### **Optimal oil processing technology and competitiveness**

#### *PhytoTrade Africa*

This is an ambitious project with three objectives. The first is to select the most appropriate technology for the decortication of indigenous Namibian fruits, and the extraction and filtration of plant oils from *Schlerocarya birrea* (marula), *Schinziophyton rautanenii* (manketti/mongongo), *Ximenia americana* and *X. caffra* (blue sour plum) and *Citrullus lanatus* (Kalahari melon), and to make informed recommendations to processors based on business principles. In the cosmetics industry, the price of oils significantly influences the concentrations at which they are included in products: expensive oils are included in smaller volumes, while cheaper oils are

quality control in order to market high-quality oils directly to the export market. It is hoped that this will result in more competitive prices, leading to increased demand, increased profits to processors, and improved cash revenue to rural producers.

The second objective is to create value from the by-products of the processing of these oils. The seed cake is being analysed, and extracts are being developed with a view to finding commercial opportunities. Kalahari melon has recently been identified as holding very high concentrations of a compound called citrulline, which has properties that improve blood circulation. An extraction method is being developed to see if a competitive and useful ingredient can be developed for the market.



Raw and filtered manketti oil

used more liberally. At the moment, indigenous plant oils from Namibia are locally produced with low yield efficiency, which increases the product cost, and they are filtered in Europe, which further adds to processing costs, resulting in a high-priced, low-volume niche product, with a low percentage of inclusion in finished products. The aim of this processing research is to improve operating margins, add value in Namibia, and localise filtration and

The third objective is to improve the positioning and marketing of the oils. The aim is to confirm the safety of the oils and to perform clinical trials to demonstrate their efficacy and best use as cosmetics ingredients. This involves the complicated process of developing suitable cosmetics products that are applied to volunteers over a set timetable, with changes in the properties of the volunteers' skin, complexion and hair being monitored. This will give concrete support to the marketing of the oils, and will hopefully enable brands that use the correct proportion of the ingredient to make verifiable claims about their product.

The project commenced in April 2011, and an analysis of the results attained thus far has identified technologies that can improve oil yield by as much as 80%, that can remove bacteria, fungi and yeasts from the oils, and that can improve decortication methods; potential applications for waste and by-products have also been identified. At the same time, inappropriate technologies have been identified and eliminated, products that might warrant evaluation have been discovered, and issues requiring further research to solve particular product challenges have been identified. The project is progressing well and is

within budget, and new trials to achieve the maximum benefit from this research are being pursued.

### Inventory and screening of Namibian indigenous plant species for the development of new natural products

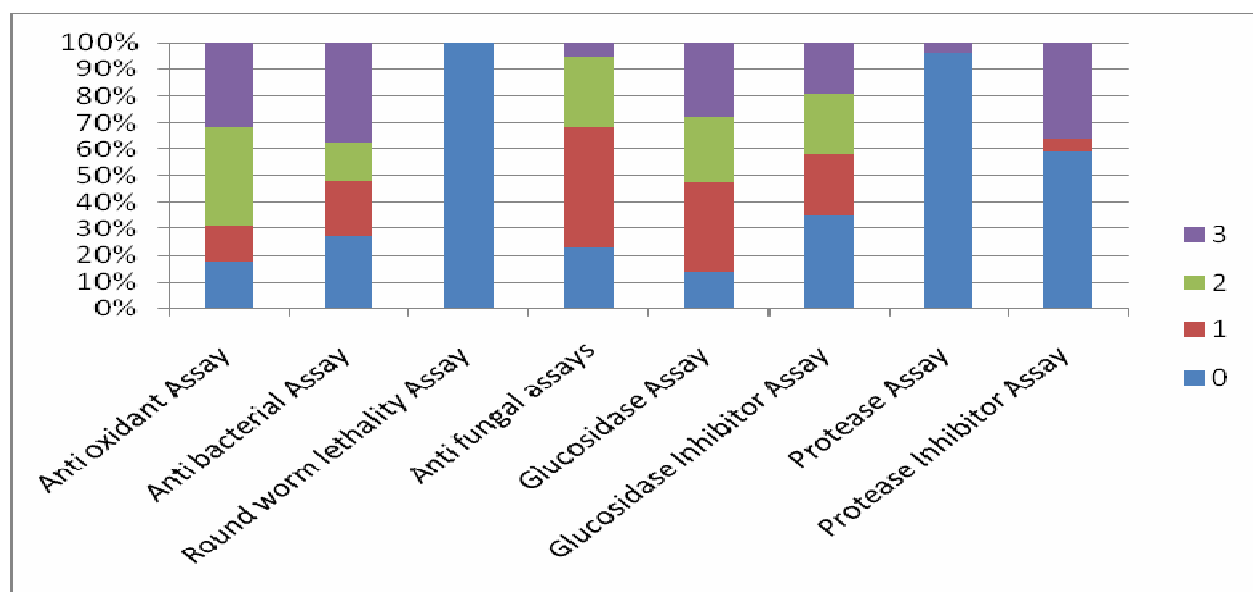
Rutgers University

This project aims at enhancing sustainable local economic development by surveying and inventorying utilised indigenous Namibian flora to identify potentially new uses for them as ingredients in indigenous Namibian food, flavour, health, nutrition and cosmetic products. The model employed adopts a holistic approach of bio-exploration and commercialisation of Namibian flora, including the revision, inventorying and botanical authentication of indigenous plants and their uses, the establishment of broad-based criteria to select a set of 100 species, and the collection and screening of these plants in Namibia for bioactivity using an innovative approach where the screens are brought into the field within the source country. The aim is then to couple results from these screens with industry interest, allowing for the further exploration of the 10 most promising plants based on prospects for commercialisation and market demand.

The original compilation of 1 300 plants was then subjected to a model of natural product development selection criteria that reduced the list to about 250 species. Using a participatory approach with Namibian experts, who were asked to consider selected criteria (evaluation criteria include regional and international market assessments, sustainability (wild-crafting vs. cultivation) and the feasibility of creating a product development value chain benefiting Namibia PPOs), a final core set of just over 100 plant species was developed.

Of these final plant candidates, about 50% have thus far been collected for bioactivity screening, analysis and identification, and for voucher specimens for botanical authentication.

Plant species collected have been subjected to Screens-to-Nature (STN) technology in concert with the Global Institute for Bioexploration ([www.gibex.org](http://www.gibex.org)), using 10 portable, field-deployable pharmacological screens. These assays include: (1) General antibacterial assay using human saliva organisms; (2) General antifungal assay using animal fungi (*Saccharomyces*); (3) General protozoa lethality assay using the Bodo model; (4) Flatworm lethality assay using the *Planaria* model; (5) Roundworm lethality assay using the *Panagrellus* model; (6)



The project has conducted a comprehensive revision and inventory of the indigenous plants and their uses. Information has been obtained from several sources (historical data, collections, publications, herbaria). An inventory created from assessing these sources holds some 1 300 species, including botanical/common names, plant family, habitat recordings, plant part used, traditional uses and scientific reports, all stored and structured in a relational database.

Protease and protease inhibitor assay; (7) Anti-oxidant assay; (8) *Planaria* regeneration assay as a model of wound healing; and (9) Glucosidase and glucosidase inhibitor assays (two screens in one assay). We have trained and equipped local scientists, students, and others with innovative, cost-effective, and portable nutraceutical, nutritional and drug-discovery tools.

The relative percentage of bioactivity hits with the initial collection and screening of Namibian indigenous plants using the Screens-To-Nature kits in

Namibia was scored from 0 to 3, with 0 = plant exhibits no activity for a particular attribute, and 3= the most active.

In the second half of this one-year project, we will seek to botanically authenticate the 100-plus plant species, complete the STN assays on the entire collection, conduct chemical profiling on a smaller subset of the plants, share the results with in-country partners, and bring in the private sector interested in investing and working to commercialise indigenous Namibian natural products.

For Further information, contact: Prof. Jim Simon, Rutgers, The State University of New Jersey (jimsimon@rci.rutgers.edu).

### **Understanding marula fruit chemistry to enable commercial opportunities for innovation**

#### *PhytoTrade Africa*

PhytoTrade Africa is a southern African natural products trade association, of which EWC, CRIAA SA-DC, the IPTT and other SMEs and organisations are members. PhytoTrade Africa's project partners are the Department of Food Science and Technology (Neudamm Campus) of the University of Namibia (UNAM), Vital Solutions (industry and technical experts from Germany), EWC and CRIAA SA-DC. The MAWF's Agricultural Laboratory, where High Pressure Liquid Chromatography (HPLC) analyses have been carried out, is also a key collaborator.

The project's objectives are (1) achieving project and laboratory setup using local technicians and facilities supported by external experts; (2) generating scientifically and commercially credible results on

marula fruit chemistry through the ripening process; and (3) attaining a clear understanding of marula fruit commercial opportunities. A further objective is to generate business opportunities for EWC and to build local analytical capacity.

The project has successfully achieved the first two objectives, with samples representing eight consecutive days of ripening from 50 marula trees being collected and recorded, and transported in a frozen state to the UNAM. Analytical targets were agreed upon, and laboratory setup and standard operating procedures were developed; a team was trained in the appropriate methods. Chemical and physical parameters of the fruits were analysed at UNAM; at the Agricultural Laboratory, an HPLC machine was commissioned, and staff were trained to operate it in order to generate a chemical profile through the ripening process. Technical problems were solved, and all results have now been obtained.

The project team led by Vital Solutions is now correlating the various chemical analyses with practical traditional knowledge of fruit characteristics. Discussions of the results are taking place with a global company with a potential interest in developing marula fruit products with EWC.

PhytoTrade Africa is carrying out a Freedom-to-Operate assessment (looking at patents and technical literature which may have an impact on the commercialisation of marula fruit products), and are also carrying out a market access study looking at the regulatory hurdles to launching a marula food product in the EU and USA markets. The project was due to end in November 2011.

## ***SOUTH AFRICA'S BIOPROSPECTING, ACCESS AND BENEFIT SHARING REGULATIONS***

---

Bioprospecting is the search for useful compounds in nature, often involving the collection and examination of biological samples for sources of genetic or biochemical resources. It can involve plants, animals or micro-organisms, and often includes the collection of traditional knowledge for use by i.a. the pharmaceutical, food and cosmetics industries. Research and development of the biological resource to identify genetic components, and the development and application of these for commercial use, are classed as bioprospecting.

In 2008, bioprospecting regulations were formally established in South Africa to protect against biopiracy of indigenous biological resources. The Bioprospecting, Access and Benefit Sharing (BABS) Regulations of 2008 are complementary to other legislation currently in effect in South Africa, including the National Environmental Management

Act (No. 107 of 1998) and the Biodiversity Act (No. 10 of 2004), along with the international Convention on Biological Diversity (CBD) and the Nagoya Protocol. The BABS regulations have recently caught the attention of the cosmetics industry in South Africa and other countries in the region, including Namibia. Many observers believe that the South African regulations are too stringent, and now that the Nagoya Protocol has been agreed upon, it is possible that other countries will also adopt regulations that are in line with those of South Africa.

Any plant that is indigenous to South Africa, whether gathered from the wild or cultivated, is classed as an indigenous biological resource, and trade in such a plant will require a bioprospecting permit. As part of the CBD's Access and Benefit Sharing objective, Mutually Agreed Terms must be established with providers of any biological resources, and Prior

Informed Consent must be sought. The BABS Regulations will regulate the permit system which will apply to discovery and commercialisation phases, as well as to the export of any indigenous biological resource from South Africa for bioprospecting and other research purposes. As part of the permit, a Material Transfer Agreement and a Benefit Sharing Agreement (BSA) will have to be established with all associated parties, and a bioprospecting permit will only be granted if it is shown to contribute to the conservation of biodiversity or economic development, or if it enhances scientific understanding and technical capacity. The South African regulations require a BSA for simple, uncomplicated biotrade, even if no new molecular structure or use of traditional knowledge is involved. It is highlighted by many in the sector that this was never the intention of the Nagoya Protocol, the guidance legislation.

The regulations have implications for the production of cosmetics, complementary herbal medicines, fragrances and flavours, and any other products derived from indigenous biological resources in and around South Africa. In turn, it is envisaged that other countries, including Namibia, will develop their own national legislation to deal with bioprospecting issues.

These new regulations are expected to have an impact on stakeholders in the cosmetics sector, including ingredient suppliers and manufacturers, and the harvesters and processors of the ingredients. Acquiring a bioprospecting permit in its current form is not a simple task, and the administrative burden imposed through additional paperwork and the requirements of related legislation may result in a significant decline in the use of indigenous natural ingredients in the cosmetics and other sectors. For example, if a cosmetics formulator in South Africa develops a product containing marula oil from

Namibia, South African regulators will require evidence that the material was acquired in line with Namibian requirements. However, these requirements have yet to be fully defined; in establishing the Namibian requirements, it will therefore be crucial to ensure that trade in indigenous biological resources remains active, with fairness and equity, and the conservation of biodiversity, remaining key objectives. The regulations will in probably require BSAs with indigenous natural producers in Namibia, and consultations with the Interim Bioprospecting Committee.

The South African Department of Environmental Affairs is currently consulting with the cosmetics industry in South Africa. It is imperative that those working with indigenous natural products from South Africa fully understand the requirements, as non-compliance could result in up to 10 years imprisonment and/or a fine of up to R10 million. To clarify the scope and nature of the requirements, PhytoTrade Africa will meet with the relevant Namibian stakeholders to discuss the regulations, and how they affect Namibia. This will assist in the process of developing Namibian regulations which, as far as possible, ensure the continuation of the productive and essential biotrade in the region.

#### Useful links

Convention on Biological Diversity: [www.cbd.int](http://www.cbd.int)

South African Government, Department of Environmental Affairs: [www.environment.gov.za/](http://www.environment.gov.za/)

PhytoTrade Africa: [www.phytotradeafrica.com](http://www.phytotradeafrica.com)  
Union for Ethical BioTrade: [www.ethicalbiotrade.org/](http://www.ethicalbiotrade.org/)



Dancers at the Omagongo Cultural Festival

## **USEFUL RESOURCES FOR PROCESSORS AND EXPORTERS**

---

This address list has been extracted from PhytoTrade Africa's Market Review issue no. 10 (May 2010); it is intended for processors who want to develop new products and for exporters who want to contact potential buyers and find new markets for their products.

### **Laboratory analysis**

Mircochem – Specialised Lab Services provides a range of analyses for food-related industries; based in Cape Town, South Africa: <http://www.microchem.co.za/>

NIS Labs specialises in natural products research and provides a range of contract research laboratory services: <http://www.nislabs.com/services.htm>

Acorn Laboratories is an accredited testing laboratory providing analyses for several sectors, including cosmetic, and food and beverages; based in Johannesburg: <http://www.acorngroup.co.za>

Swift Micro Laboratories provides laboratory analysis for the food and cosmetic industries with a focus on food/product safety; based in South Africa: <http://www.swift.co.za/>

Hearshaw and Kinnes Analytical Laboratory provides a pesticide residue testing service and is SANAS certified; based in Cape Town, South Africa: [www.hkal.co.za/](http://www.hkal.co.za/)

Contract Laboratory.com provides a worldwide directory of laboratories for a broad spectrum of laboratory testing and scientific research; contact details of the labs are provided along with the services they provide: <http://www.contractlaboratory.com/>

### **Natural formulators / cosmetic consultants**

Trevor Steyn is a natural cosmetic formulation scientist and has worked extensively with PhytoTrade Africa; contact details are available from Dr. Lucy Welford (Phytotrade Africa, Marketing and Communications, Cape Town, South Africa).

Lindsay Grier is a natural product formulator who works with African Earth Tones; contact email address: [ljgrier@telkomsa.net](mailto:ljgrier@telkomsa.net)

Cosmetic Solutions (John Knowlton) offers a full formulation development service as well as a number of related services, such as quality control and regulatory assistance; contact email address: [john@cosmeticsolutions.co.za](mailto:john@cosmeticsolutions.co.za)

### **Contract manufacturers**

Blue Sky Botanics is a commercial partner of PhytoTrade Africa based in the UK, manufacturing botanical extracts for the health & beauty, food and beverage, and herbal supplement industries: <http://www.blueskybotanics.com/>

Cosmetic Solutions provides private label skin care manufacturing, formulating and marketing services: <http://www.naturalskincare.com/>

CosQ Manufacturing c.c. is a contract manufacturer of cosmetics and toiletry formulations based in Cape Town, South Africa: <http://www.cosq.co.za/>

Cosmetech Laboratories. Inc., based in the US, provides services including evaluation of new raw materials to determine their performance and the development of personal care formulations to guide formulator and chemists interested in using the material; works in conjunction with Steinberg Associates: <http://www.cosmetech.com/>

### **Packaging**

RAP Products specialises in packaging for cosmetics and body products, providing a variety of designs available in glass and plastic; based in Gauteng and Cape Town, South Africa: [www.225crystalpack.co.za](http://www.225crystalpack.co.za)

Bowler Plastics (Pty) Ltd is a rigid plastic packaging manufacturer in South Africa specialising in producing customised packaging: [www.bowler.co.za](http://www.bowler.co.za)

Nampak manufactures a diverse range of packaging products using paper, plastic, metal and glass; it has operations in several member countries across southern Africa: [www.nampak.com](http://www.nampak.com)

### **Online marketplaces**

One method for producers/suppliers to access customers is through online producer/buyer websites. These websites are abundant, but some are specifically designed for trade in vegetable oils and oilseeds. A small selection is listed below, with web links for further investigation.

**Bulk Oil.com** is "The world's leading B2B trade portal for Vegetable Oils, Essential Oils, and Biodiesel". It is designed to connect buyers and producers/sellers over the internet and since inception, claims to have expanded export

markets and help buyers locate producers. It boasts a wide-ranging oils catalogue which includes baobab oil: [www.bulkoil.com](http://www.bulkoil.com)

**Commodity Online Marketplace** is described as a B2B platform that helps users to buy and sell a variety of commodities, including oil and oilseeds: <http://market.commodityonline.com/>

**Green Trade.net** is "The marketplace reference for organic farming professionals" and works as an international exchange platform for organic producers, manufacturers and distribution networks; it claims to be the largest organic community on the internet: [www.greentrade.net/](http://www.greentrade.net/)

**Oilganic:** Although this website is positioned towards essential oils, it also deals with almond oil, avocado oil and some other edible oils, and other oils that may also be relevant: [www.oliganic.com](http://www.oliganic.com)

#### **Other sources of information**

**Coschem** is the Society of Cosmetic Chemists South Africa; it is a professional society for scientists and individuals involved in the cosmetics sector: <http://coschem.co.za/>

**Cosmetics Business** is the official website for Soap Perfumery & Cosmetics, and includes information on European cosmetic markets and cosmetics & toiletries manufacture worldwide: <http://www.cosmeticsbusiness.com/>

**American Oil Chemists Society (AOCS)** is a global professional scientific society for all those with an interest in the fats and oils fields. It is a membership-based society, with members receiving a range of benefits including access to professional and technical information: <http://www.aocs.org/>

**Cosmetic Design Europe:** <http://www.cosmeticsdesign-europe.com/>

**European Cosmetics Association:** (COLIPA) <http://www.colipa.eu/>

**Personal Care Products Council:** <http://www.personalcarecouncil.org/>

**European Federation for Cosmetic Ingredients (EFFCI):** <http://www.effci.org/>

**The Society of Cosmetic Scientists (SCS):** <http://www.scs.org.uk/>

For more information on this report or enquires relating to indigenous natural products in Namibia, please contact:

#### **The IPTT Secretariat**

National Botanical Research Institute  
Plant Product Development Section  
Ministry of Agriculture, Water and Forestry  
Private Bag 13184, Windhoek, Namibia  
Tel: +264 (61) 202 2012 / 202 2015  
Fax: +264 (61) 258 153  
Email: [stevec@nbri.org.na](mailto:stevec@nbri.org.na)  
[loide@nbri.org.na](mailto:loide@nbri.org.na)

#### **Millennium Challenge Account Namibia**

(Indigenous Natural Products Activity)  
Atlas House  
P.O. Box 23005, Windhoek, Namibia  
Tel: +264 (61) 410 434  
Email: [dave@mcanamibia.org](mailto:dave@mcanamibia.org)  
[luahengo@mcanamibia.org](mailto:luahengo@mcanamibia.org)

*INP Market Bulletin* is produced by MCA-N with funding through Millennium Challenge Corporation. MCA-N gratefully recognises the assistance of all individuals and institutions who have contributed to this bulletin.

