Use of marula products for domestic and commercial purposes: Synthesis of key findings from three sites in southern Africa

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ABSTRACT

This reports summarises and syntheses the results of household surveys on the use and trade in marula products from three sites in southern Africa: Makhatini and Bushbuckridge in South Africa, and the former Ovamboland in North-Central Namibia. A minimum of 60 and a maximum of 142 household interviews were conducted to establish the uses of marula, the quantities used/made of each marula based product, sales and income figures, cultural and social value, access and management issues, and resource availability in each of the three sites. The current role that marula plays in local livelihoods, and the positive and negative impacts of marula commercialisation on the social, financial, physical, natural and human capital of local households were explored. In this report the commonalities and differences between sites are highlighted. The survey forms part of a larger collaborative project on "Winners and Losers in NTFP Commercialisation" which seeks, through detailed study of selected species, to assess the social and economic impacts and benefits of NTFP commercialisation for the livelihoods of the rural poor.

In all sites extensive use was made of a wide range of marula products including fruit, juice, beer/wine, kernels and wood. In addition, in Namibia, all households were also producing an oil from the kernels, mainly for cooking purposes. The cake made from the residue after oil extraction was also widely consumed or fed to livestock. The quantities of fruit used (on average just over one tonne per household per season) and beer/wine produced (on average between 150 and 350 l per household per season) were within the same range in all three sites, but households in Namibia were using up to ten times the amount of kernels (about 70 l per household per season) that households in South Africa did. In all sites, marula was found to form an integral part of the livelihoods and culture of residents, many of whom were living below the poverty line and dependent on natural resources to meet a range of basic needs. Of particular significance in all three sites were the neighbourhood marula parties where the beer/wine was drunk. These are important in building social networks and reciprocal relations, and are a key form of social capital. The potential demise of these 'get-togethers' was one of the main concerns linked to marula commercialisation.

In South Africa, almost all households using marula harvested the fruit from the communal lands even when they had trees at home or in their fields. By contrast, in Namibia almost all marula trees were 'privately' owned and were found in people's fields. There were practically no trees in the communal lands. Consequently, in Namibia, a number of informal institutions have evolved to ensure equity and sharing of the marula resource. Beer/wine is brewed under the marula trees in owner's fields and is a social event in which other women partake and provide their labour in order to receive a share of the benefits. In South Africa, people generally make the beer/wine at home, sometimes with help from family members, using fruit collected from the commonage. Of significance, is that in South Africa anyone can access marula and use it at their own discretion, whereas in Namibia a certain proportion of villagers depend on the good will of friends and neighbours for marula products.

In terms of commercialisation, only two households were selling marula products in Makhatini, where this activity was generally not supported by the community leadership. In Bushbuckridge and Namibia, households were selling both in the local market and to commercial producers. Fruit, kernels and beer/wine were sold in

Bushbuckridge, whilst kernels and beer/wine were sold in Namibia. Because of the seasonality of the resource, incomes earned were, on the whole, modest (generally on average between R100 and R400 per household per season based on sales to commercial producers and R900 per household per season for beer/wine in the local market). However, in both sites, because of high levels of poverty, this income, however limited, was critical in paying school fees and other schooling costs and in buying food.

In Makhatini and Bushbuckridge the marula resource appeared to be abundant and most households did not feel that there was any shortage. In Namibia, on the other hand, 75 % of households felt that there was inadequate fruit for everyone who wished to collect. This has implications for increased commercialisation.

The final section of this report summarises the livelihood benefits supplied by marula, and the potential effects of commercialisation on rural livelihood systems, household income, socio-cultural values and norms, subsistence use, local markets and resource sustainability. Some discussion of the way forward is also made. Overall, it was felt that although the marula tree and its products will not be able to solve rural poverty in the three sites, this NTFP does have a key role to play in meeting a range of livelihood needs from food to cash. Its significant cultural value also means that this species provides a range of social benefits and is important in building social capital. Commercialisation, so far, in the two sites where it is common has been largely positive and people generally, and women in particular, feel positively inclined towards it. However, there were some concerns regarding the effect of commercialisation on the traditions and cultural practices that surround marula, and, in some areas, there was already some indication of a decrease in the sharing of marula fruit and its products amongst the wider community. The commodification of the resource is thus turning it from something that was shared and seen as a gift into something that is retained by individual households to sell. There is a fear, mainly amongst the community leadership, that in the long term this will result in increased individualism and selfishness, and a breakdown in social cohesion. Despite some of these reservations and the need to give attention to the above issues, it is believed that the trade in marula kernels could be promoted in all three sites, but that the local beer/wine trade which is much more integral to the social dynamics of the community should be allowed to evolve at its own pace, although the present circumstances of beer/wine traders, mainly in Bushbuckridge, need to be improved.

CONTENTS

LIST OF TABLES

LIST OF BOXES

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1. INTRODUCTION

1.1 Background and context

Many millions of people across the world have long made use of a wide variety of natural resources, or non-timber forest products (NTFPs), to meet their daily livelihood requirements (Arnold and Townson 1998, Wollenberg and Ingles 1998, Neuman and Hirsch 2000). Fuelwood, wild foods, medicines, honey, building and fencing wood, and craft materials are all used on a regular basis by a majority of households. In recent years, increased demands for cash income, a diversification of livelihood strategies and the recognition by external agencies of the potential of NTFPs as an option for promoting development and conservation have led to increased commercialisation of many of these previously subsistence resources (Arnold and Ruiz Perez 1998, Belcher and Ruiz Perez 2001). This commercialisation process has taken many forms and routes, and has been driven by local initiative as well as by development agencies and the private sector. The project on "Winners and Losers in Forest Product Commercialisation" of which this report is a part was conceived to investigate the social, ecological and economic impacts and opportunities associated with NTFP commercialisation. The project aimed to reveal generic relationships between commercialisation and community impacts and benefits from detailed case studies of selected species. *Sclerocarya birrea*, commonly known as marula, was the species chosen for the southern African case study.

S. birrea is a widespread species throughout the semi-arid deciduous savannas of much of sub-Saharan Africa. In the countries in which it is found, this species has long formed an integral part of rural communities' livelihoods, culture and spirituality (Shackleton *et al.* 2002). Indeed, there are few wild species that demonstrate such a wide range of uses or such a significant position in local culture. Marula provides fruits (during the summer months from December to early April) that can be eaten whole, made into juice or jam or brewed into beer/wine; the kernels form an important food supplement and the oil extracted from them has many uses; the bark and leaves have medicinal properties; and the wood is used for a variety of purposes including carving and fuelwood. The tree is also host to a range of edible caterpillars and larvae as well as parasitic mistletoes which produce outgrowths known as wood roses which are sold in the curio market (see Shackleton *et al.* 2002 for details). Given the ubiquitous distribution, importance and multiple uses of this species it is not surprising that there have been attempts to commercialise it, and increasingly a variety of marula-based products are entering the markets either through the efforts of local people themselves (Shackleton *et al.* 2000a, Shackleton *et al.* 2002) or by private sector companies or development organisations aimed at improving the welfare of rural dwellers (Wynberg *et al.* in press).

It was within this context that the household surveys summarised here were undertaken. Despite there being extensive literature listing the uses of marula, there is a paucity of data quantifying this use. Little was known about the extent of use of marula products across rural households, the quantities used, the degree of local trade and the social and cultural value of this species. Furthermore, differences in these variables and parameters across the range of this species and amongst different ethnic

groups were equally unknown. There has been no comparative analysis of marula use and commercialisation at different sites within the region.

We felt that without some understanding of the role that marula currently plays in rural livelihood systems and the broader socio-economic context in which this takes place, it would be impossible to assess the impacts of current or future commercialisation efforts on the natural, human, social, financial and physical capital of poor rural households. The household surveys thus provided a picture of the use and importance of marula to rural households for both domestic and commercial purposes in different regions of the marula's distribution in southern Africa.

1.2 Purpose of this report and key questions and issues addressed

This synthesis report summarises, as part of a large integrated project, the key findings from three separate households surveys on marula use conducted in:

- the Bushbuckridge district, Limpopo Province, South Africa (Shackleton and Shackleton 2002) (referred to as the **Bushbuckridge** case study in remainder of this report);
- Ophande ward on the Makhatini flats, Ubombo district, northern KwaZulu-Natal, South Africa, (McHardy 2002) (referred to as the **Makhatini** case study in the remainder of this report); and
- former Ovamboland, currently part of the Oshana, Oshikoto and Ohangwena districts, of North – Central Namibia (den Adel 2002) (referred to as the **Namibia** case study in the remainder of this report).

The main purpose of this document is to highlight key commonalities and differences in the use of marula between the three regions. In particular, we were interested in comparing and contrasting the role that marula plays in local livelihood systems, its importance in local culture, the ways in which households are commercialising this resource, and the impacts of trade on the various forms of livelihood capital. Much of the report deals with the development and livelihood implications of the findings, particularly in relation to commercialisation, in line with the objectives of the overall project. For greater details, depth and the original data we refer readers to the individual site reports.

2. SUMMARY OF METHODS AND STUDY SITE DESCRIPTIONS

2.1 Approach and methods

In Namibia and Makhatini a minimum of 60 households were randomly interviewed, whereas the sample size for Bushbuckridge was 142 households in four villages (Hokwe, Rolle, Edinburgh and Allandale). A common interview schedule was used. The interviews, of between one and two hours in length, were conducted in the vernacular with the assistance of local interpreters, except where the respondent was fluent in English. The field sites were visited during the marula season (December - March), although, due to the need to collect other data during the fruiting period, the

surveys had to be carried out prior to fruit fall and ripening. Households were therefore requested to report on the previous two season's use of marula.

The questionnaire was complex and comprehensive and covered:

- the uses of marula;
- quantities used/made of each marula-based product (e.g. fresh fruit, beer/wine, jam, kernels, wood, medicine);
- sales and income;
- cultural value;
- access, management and tenure issues;
- resource availability; and
- household socio-economic characteristics.

Much additional, anecdotal and qualitative information was recorded to complement and qualify the quantitative data, either during interviews or in separate group meetings.

Data were captured in Excel spreadsheets and analysed for each village individually and the whole data set. Estimates of quantities of fruit and kernels consumed, or beer/wine or jam produced per season were calculated from the data on amounts collected or made each time, the frequency of collection or production, and the length of the season. All data were averaged across households. Where there was wide variation in the data, ranges as well as means are reported. In this summary report the results across individual villages/households were pooled for each area to provide averages representative of the particular study area as a whole, and to facilitate comparison between sites.

2.2 Study sites and characteristics of user communities

2.2.1 Study site descriptions

All three study sites were characterised by poor infrastructure, high population densities, poverty, a lack of employment opportunities and a dependence on multiple livelihood strategies and income sources including: farming, urban migration, migrant remittances, social welfare grants, formal jobs, resource gathering, petty trade in a range of purchased and collected goods, and micro-enterprises such as sewing, welding, mechanics, taxis, etc. Brief descriptions and background information on each of the study sites follows.

Makhatini

Ophande ward on the Makhatini flats extends from the Pongola river in the north, along the floodplain areas on the flats up to the base of the Lebombo mountains to the west, and to the Mkuze river in the south (Latitude 27^{o} S; Longitude 32^{o} E). The eastern border comprises state land currently managed as the Makhatini Irrigation Scheme. The settlement pattern is one of dispersed homesteads, with each homestead belonging to members of a single extended family.

The study area lies between 72 – 100 m asl. The climate is hot and subtropical, with an average yearly rainfall of 620 mm. Monthly mean temperatures for January are 26^{o} C and in July 17^{o} C. Heavy winds occur during the summer months. Soils on the

floodplain are alluvial and heavy with up to 30 % clay. Soils on the slightly elevated areas are more sandy and stony. Large areas of the floodplain were cleared for the establishment of the Makhatini Irrigation Scheme in, and prior, to 1984 (approximately 1500 ha). Areas adjacent to the scheme, in the communal lands, have also been cleared over the last 18 years for the creation of arable lands, homesteads, schools, etc. Clearing of indigenous bush decreases as elevation increases and distances to arable fields and major roads increase. Large areas near the mountain crests are inaccessible by vehicle, difficult to build on and almost impossible to cultivate and remain as indigenous bush.

Many of the people in Makhatini were resettled in a few 'villages' during the creation of the irrigation scheme, receiving access to ten hectare plots for farming purposes. People were also brought in from the Tugela area. Many of these residents are still using their plots today, although few of them are doing more than subsistence farming and many owe money to loan institutions. Some plot-owners have sub-leased plots to other farmers. People have also settled, in the communal lands, between the designated 'villages', creating a continuous sprawl of homesteads, small farming plots, grazing lands and small shops. As well as farming on the scheme, local residents may work as casual labourers on farms, or work in local businesses in nearby towns. Makhatini is, however, largely a subsistence farming community, perhaps more so than the other two sites. About 80 % of households interviewed have fields in which they are planting maize and pumpkins for home use, and small-scale cotton and sugar cane for commercial sale. These fields tend to be larger than at either of the other two sites. Over 80 % of households also cultivate home gardens.

Bushbuckridge

The Bushbuckridge district (31^{o} 0' – 31^{o} 35' E; 24^{o} 30' – 25^{o} 0' S), corresponding to the Mhala and Mapulaneng areas of the former Gazankulu and Lebowa homelands[1] (Figure 1), covers an area of 2417 km^2. It lies between the Drakensberg escarpment in the west and Kruger National Park and Sabie-Sand Game Reserve in the east, the Sabi river in the south and the Orpen road to Kruger National Park in the north. People live in 65 settlements varying in size from less than 100 homesteads to over 800. Like most rural communities across the globe, people in Bushbuckridge are highly dependent on the communal rangelands (some 1564 km^2) for a range of goods and services that contribute to their everyday livelihood needs including grazing, fuelwood, wild fruits and herbs, wood for construction and tools, medicines and craft materials.

There is a strong gradient of decreasing rainfall across the district from 1200 mm p.a. in the west against the Drakensburg escarpment to 500 mm p.a. in the east. Mean annual temperature is approximately 22^{o} C, and frost is rare. The terrain is flat to undulating and the most extensive soil types are shallow sandy lithosols, except towards the base of the slope where deeper duplex soils are common. Closer to the

[1] Homelands were created in South Africa as labour reserves legitimated by a complex of apartheid ideals and policies that emphasised the importance of separate development for different 'ethnic groups'. These homelands were literally meant to be the 'homes' of people who sold their labour to mines, industry and agricultural enterprises. They were the only areas where black people could access land, which was held in 'trust' by the state and administered through the tribal authorities. In total the homelands constituted only 13% of the surface area of South Africa. In the early 1990's, all homelands were reincorporated into South Africa.

escarpment, deep apedal soils prevail. Erratic rainfall and frequent droughts (approximately once every three to four years) coupled with shallow, nutrient poor soils and land scarcity severely limit arable production and force most of the population to seek alternative means of livelihood.

The natural vegetation is open, deciduous woodland (Subtropical Dry Forest according to the Holdridge Life Zone system). Paralleling the rainfall gradient, two broad vegetation types are evident, Lowveld Sour Bushveld in the wetter west, grading to Lowveld towards the east (Acocks 1988), approximately along the 800 mm isohyet. The tree stratum is dominated by members of the Combretaceae and Mimosaceace. *Sclerocarya birrea* (marula) occurs throughout the region, but is most abundant in the intermediate rainfall region between the two extremes in the east and west.

The official 1996 census obtained a population of 543 699 for the area. Projections from a demographic study estimated it to be nearer 660 000 (Tollman *et al*. 1995). Population densities are high at approximately 150 people km^{-2} in the east, and 300 people km^{-2} in the west. Unemployment runs between 40 – 80 %, with a dependency ratio of 93 % (Pollard *et al.* 1998). There is a heavy reliance on the cash economy and on old age pensions. Approximately 50 % of the adult male population and 14 % of women engage in migrant labour (Pollard *et al.* 1998). Average household incomes range from R178 to R1131 per month, with most households living below the poverty line of R700 per month (Tapson 1996). Infrastructure and services are poor compared to other parts of South Africa, but typical of the ex-homelands. Bulk water supplies are available to most villages, but few households have private connections. National grid electricity is available to some villages and all 'townships' serving approximately half the population.

<u>*Namibia*</u>

A number of settlements within a larger region in North-central Namibia formed the study site (17 ^{o} 26' - 17 ^{o} 54' S; 14 ^{o} 58' – 15^{o} 55' E). The climate is semi-arid characterised by high temperatures, and rainfall that varies greatly in amount and timing. Average annual rainfall is 350-500 mm, with most falling during the summer months from November to April. Soils are largely dominated by mixtures of sands and clays. Their potential for crop production is low due to poor water-holding capacity, low nutrient content, high salt content, and hard layers of clay below the surface. Large areas have been deforested as a result of the heavy demands for wood, which has mostly been used for housing, fencing, and fuel.

The Owambo people settled in the area, mainly along the Cuvelai river, hundreds of years ago. They consisted of eight tribal groups, each with their own King, culture, and dialect. Only two groups, the Ndonga and the Kwaluudhi, still have their own King, but all the tribal authorities, with their sub-headmen, village headmen, senior headmen, and Chief/King, are still functional, and to some extent acknowledged by the government. The traditional authorities have their own courts for settling disputes and are in charge of allocating land and grazing rights. Disregarding the tribal boundaries, there are regional governments in the four political regions, divided into 41 constituencies, which are governed by governors and councillors. On a lower level are the local governments, which are responsible for the affairs of towns and larger villages. The entire study area is home to almost half of Namibia's population, an

estimated 800 000 people are living in the area. Farms and homesteads are spatially spread; people are not living in concentrated villages, and because of the distances households live quite independently from one another.

In the rural areas most people are involved in subsistence farming, with pearl millet and sorghum as their main crops. Livestock in the area mainly consists of cattle, goats, donkeys, and poultry. Although subsistence farming is the main activity for most households, this alone represents a poor and, in some years, insufficient means for survival. People are therefore, to a large extent, still dependent on tree products and other natural resources. In addition, many young people leave the rural areas to look for employment in the urban centres. There are three main urban centres in the region, all alongside the main road. These urban centres are growing, both in size and in economic terms. People in the rural areas retain close links with relatives living in the urban areas, and incomes from employment and diverse business activities contribute especially to the larger rural households.

2.2.2 Socio-economic characteristics of surveyed households

The average number of jobs per household and average income were similar for both Bushbuckridge and Namibia (approximately one job and R700 per month), but lower in Makhatini (approximately 0.6 jobs and R300 per month) where communities tend to be more isolated and more involved in subsistence farming (Table 1) (see above). However, an income distribution profile across households revealed that even in Bushbuckridge and Namibia as many as 25 % and 48 % of households respectively had incomes of less than R250 per household per month. The proportion of households without any form of cash income was highest in Makhatini, where as many as 38 % of households had no regular source of income compared to 15 % in Bushbuckridge, and 12 % in Namibia (Table 1). Makhatini thus appears to the poorest of the sites with the least opportunity for livelihood diversification away from agrarian activities.

All the sites were characterised by a high proportion of female-headed households: between one quarter and one third of households. Household size was similar across South African sites with between 6 – 7 people per household, but much higher in Namibia at 12 people per household. Thus, in Namibia there is greater dependency on income earners than in either of the other two sites, and household incomes have to be shared amongst almost double the number of household members. In Bushbuckridge, 87 % of households had one or more unemployed members of economically active age, with the equivalent in Makhatini being 94 %. Most of these household members are seeking means of self-employment having been unable to find jobs in the formal job market.

The average level of education amongst adult household members was relatively high at about eight years in Bushbuckridge and six years in Makhatini. The average level of education of the most educated household member was between 10 and 12 years in all three sites. In general household heads had fewer years of education than the younger members of households (4.8 years in Bushbuckridge, 3.3 years in Makhatini and 7.8 years in Namibia). Poor education was therefore not one of the factors preventing people finding employment, and, indeed, it was generally the youth with school leaving certificates that were unable to find jobs.

The average residency period of households in Namibia at 40 years was longer than in Bushbuckridge or Makhatini at 30 and 16 years respectively. In Makhatini people were resettled after the creation of the irrigation scheme, and in Bushbuckridge there was a spate of forced removals in the 1970s when the separate homelands of Gazankulu and Lebowa were created.

Table 1: Key socio-economic characteristics of households interviewed in each of the study sites.

Variable measured	**Bushbuckridge**	**Makhatini**	**Namibia**
Average residency period (years)	31 ± 0.2	16 ± 1.4	40 ± 2.6
% female headed hh	34.5	25.4	33
Average hh size	7.5 ± 0.3	7.2 ± 0.3	11.9 ± 0.8
Average number of jobs per hh	1.01 ± 0.1	0.62 ± 0.1	1.3
% of hh with one or more jobs	66	49	62
% of hh with pensions	35	27	10
% of hh with no regular income from jobs or grants	15	38	12
Average hh income from resident earners (Rands/hh/month)*#	731 ± 85	335 ± 58	799 ± 319
Average remittances from migrants and non-resident contributors (Rands/hh/month)	195 ± 42	113 ± 48	Difficult to obtain - often in kind payments
% of hh earning <R250/month	25	37	48
% of hh earning between R251 – R1000/month	47	44	35

* Monthly incomes were not easy to obtain as some households were reluctant to divulge their incomes, whilst others found this variable difficult to estimate, either because they did not know what the income earner earned or because they were self-employed and income varied widely from month to month. We believe that there was a tendency to over-estimate income from self-employment. However, the values obtained were comparable to existing estimates for the study sites.

\# The Namibian Dollar (N$) and South African Rand (SA R) are linked and directly equivalent to each other.

Although incomes were mainly low, erratic and below the poverty line, households in all three sites did have access to basic assets such as housing and land for cultivation. More use was made of traditional building materials in Namibia and Makhatini than in Bushbuckridge, although cement blocks and corrugated iron were frequently used in all three sites. In all sites, poles, mud and thatch were commonly used for 'out' buildings. Radios were owned by the majority of households (>90 %) throughout all sites; this being their primary way of keeping in touch with the world. In Bushbuckridge, 50 % of households owned TVs, whilst the corresponding figures for Namibia and Makhatini were 14 % and 29 % respectively. Vehicles were owned by a

consistent 16 % of households across all sites. Most households in the South African study areas had fenced their plots using mainly indigenous poles and wire, and sometimes stone (this variable was not reported for Namibia). The fact that the majority of homesteads were fenced has helped in the protection of young marula trees and makes agroforestry a feasible option. In all sites, most households were only consuming meat between one and five times per month. Meat consumption is usually a fairly good indicator of household wealth.

Between 50 % (Bushbuckridge) and 100 % (Namibia) of households in the study areas had access to land for farming and a wide diversity of crops were grown, with maize being the staple in South Africa and pearl millet in Namibia. Most households in South Africa also cultivated their home plots, whilst this was not common in Namibia. Exotic fruit trees were a common feature of home plots in Bushbuckridge, to a lesser extent in Makhatini, and were almost non-existent in Namibia. Indigenous fruit trees were found in plots and fields in all sites. Cash crops such as cotton and sugar cane featured more in Makhatini than the other two sites. A small percentage of households in all three sites sold produce, but the majority of households were cultivating for home use.

Livestock (mainly cattle and goats) ownership varied from one quarter of households in Bushbuckridge, to 50 % in Makhatini, to 75 – 89 % in Namibia. The average number of cattle held by owning households was between 10 and 12 animals across sites; goat numbers were slightly higher at between 12 and 25 animals. These livestock were commonly seen as a household asset and saving and were only sold under exceptional circumstances when cash was urgently required. Chickens were kept by most households across all three sites.

The difficult socio-economic circumstances of residents in all three areas have forced them into using and commercialising the 'free' resources available in their immediate environment. This is particularly pertinent for those households headed by women. All the communities studied appeared to be making full use of the range of natural resources available to them including marula, although levels of commercialisation varied between sites. The commercialisation of marula products has been relatively recent in both Bushbuckridge and Namibia, and it appears that harsh economic circumstances are compelling people to look for new sources of cash income to contribute to an already diverse income and livelihood base. The couple of households that had commenced selling marula products in Makhatini did this because of economic hardship. In Bushbuckridge, this step was seen to be acceptable by most community leaders despite traditional taboos against selling marula because "people were suffering".

3. KEY FINDINGS: COMMONALITIES AND DIFFERENCES BETWEEN SITES IN THE USE OF MARULA

3.1 Overview of marula products used by households

3.1.1 Products from the fruit

In all three study sites the majority of households made extensive use of marula for a range of products, with the consumption of fresh fruit and kernels and the production

of beer/wine[2] being amongst the most popular uses. In Namibia all households interviewed (100 %) made wine (beer) and juice, whilst in Makhatini and Bushbuckridge approximately 70 % and 75 % of households respectively made beer/wine. Juice was not made at all in Makhatini, whilst only 12 % of households made juice in Bushbuckridge.

There were other differences in the types of products produced with Namibian households making use of a greater range of products not encountered at either of the South African sites. These included a porridge made from the fruit pulp following juice extraction (78 %), kernel oil for cooking (100 %) and cosmetics (28 %) or sometimes medicine, and a cake produced from the residue after oil extraction which was either eaten by household members (100 %) or fed to livestock (68 % of households). The reason why oil pressing is unknown or uncommon in South Africa is unclear.

Kernel consumption was high in all sites (81 % - 98 % of households) with about 60 % of households mixing kernels with wild spinaches and other foods in South Africa, whilst all households did this in Namibia.

Jam, a non-traditional product, was only really popular in Bushbuckridge (48 % of households) where it had been promoted by several external agencies including the Departments of Health and Agriculture. Producer households were making approximately five litres of jam per season mainly for home consumption, with only four respondents selling it on a regular basis. Incomes earned were small at about R50 per household per year (see Shackleton and Shackleton 2002 for further details pertaining to jam).

3.1.2 Wood products

The use of marula wood for fuelwood was high in all sites (60 % - 97 % of households), although in most cases respondents said they used dead wood or wood generated from tree pruning on home plots and fields rather than live wood. Use was also reported to be infrequent or rare in most cases. A few households in Bushbuckridge indicated that they sometimes cut male trees, while other households in both Busbuckridge and Namibia mentioned that they may cut a weak or unhealthy female tree or harvest branches from trees infected by parasites. In Makhatini, 37 % of households indicated that they had never used marula wood for burning, whereas this was only 2 % in Busbuckridge. These results are similar to those found for other areas of southern Africa (see Shackleton *et al.* 2002).

Marula wood was not widely used for fencing, poles or utensils in either of the South African sites as the quality was said to be too poor for these purposes (about 10 % in South Africa). However, it was more important in Namibia (52 % - utensils and 78 % - poles). The reason for this difference is again unknown, but may be due to a lack of alternative species in the Namibian site where common lands for wood harvesting are virtually non-existent (den Adel 2002). The types of utensils made included spoons, rough seats/stools, food trays for pigs, hoe handles, catapults and pestles and mortars.

[2] Beer and wine are basically the same product, i.e. fermented marula juice, with the term beer being commonly used in South Africa and the term wine being used in Namibia. It has been said that fermented marula juice probably more closely resembles cider than either beer or wine.

A few households in Bushbuckridge and Makhatini mentioned purchasing spoons, whilst none in Namibia had bought marula wood products.

In all villages sampled, carving of marula wood was not widely practiced other than the production of the odd article for home use. However, in the Nsikasi area neighbouring Bushbuckridge this species forms the basis of a large softwood curio industry (Shackleton and Steenkamp in press). In Makhatini, five households were found to manufacture a range of carved utility items such as trays, basins, decorative spoons, plates and meat platters (*ungqoko*) from marula wood. The latter were sold by one carver for R25 each.

3.1.3 Medicinal uses

Marula was used for medicinal purposes by approximately a third of households in Bushbuckridge, 50 % in Namibia and as much as 80 % in Makhatini. It is of note that leaves were predominantly used in Namibia, whereas bark was more important in South Africa (Table 2). It is interesting to speculate why this difference exists. One possible reason could be that bark harvesting is potentially destructive, and since all trees are 'privately' owned in Namibia (mainly in fields) owners may be unwilling to risk damage to them. Certainly in Bushbuckridge, most respondents indicated that they preferred to harvest bark from trees in the communal lands rather than their personal trees in their homesteads or fields for this very reason.

Marula leaves were mainly used to treat coughs through either chewing them or making a tea from them. In South Africa, the bark was used for treating a range of ailments including stomach pains, diarrhoea or indigestion. The bark is boiled and the resulting tea drunk either directly or after straining. Generally only small amounts of bark (one handful) are used and use is relatively infrequent. In South Africa respondents did not mention any difference between the potency and efficacy of medicine between males and female trees, while in Namibia people said that the medicinal powers of male trees were greater than those of female trees.

The use of roots was again more common in South Africa than Namibia. Roots were used to treat the same range of ailments as bark and were generally harvested from communal land trees.

Table 2: Use of marula products by households (% of households) in the different study sites

% of households using		**Bushbuckridge**	**Makhatini**	**Namibia**
Fruit	Eating	94	57	97
	Beer/wine	75	71	100
	Juice	13	0	100
	Jam	31	0	3
	Other (fodder, sell, manure)	16	2	-
Kernels	Whole	88	81	98
	Oil (cooking)	0.7	0	100
	Oil (cosmetic)	1.4 (obtained from MDC)	2	28
	Add to food	61	68	100
	Eat 'cake' (residue after oil extraction)	0	0	100
	Cake as animal feed	0	0	68
Wood	Carving	5	8	0
	Utensils	10	11	52
	Firewood	94	60	97
	Other (cattle yoke, fencing, furniture)	7	0	78 (poles)
Medicine	Bark	39	80	2
	Roots	8	14	5
	Leaves	4	24	52
Caterpillars		54	39	30
Larvae		2	14	3
Game pieces		60	0	73
Other (e.g. burn shells, veterinary use, leaf skirts, fodder, rattles and necklaces, fencing, diviners dice)		15	4	100 (burn shells)

3.1.4 Other uses

Across all three sites edible caterpillars found in marulas in abundance early in the season were consumed by about one third to one half of households (Table 2), while the larvae found in the rotting wood were less well known and only eaten by about 5 % or less of households. Additional uses that were identified during the interviews, but not specifically listed in the check sheet, included the use of fruit and skins as fodder for goats and pigs, leaves as fodder and as a veterinary medicine for goats, poles in live and dead fencing, nuts and shells for kindling or for burning in wood stoves, leaves to make traditional 'play' skirts, nuts for rattles, beads and necklaces (including protective necklaces for children), hair relaxer (Namibia only) and lastly the use of a nut as a diviners die (Bushbuckridge). A number of interviewees in Bushbuckridge also listed 'selling' as an additional use.

3.1.5 Trends and changes in household use

In cases where households were not using a particular product, they were asked if they had used this product in the past and why they no longer used it. In general, in

Makhatini and Namibia people perceived there to have been little change in the way in which the community and individual households used marula products, although in Namibia it was mentioned that more extensive use was made of hair relaxer, medicine and edible caterpillars in the past. Similarly, in Bushbuckridge only a small percentage (less than 10 %) of households indicated that they had stopped using a particular marula product that they had used previously. The reasons for ceasing use were, however, interesting.

A number of respondents mentioned that they had become Christians and their church (mainly the Zionist Christian Church or ZCC) prohibited the use of alcohol or traditional medicines. Others indicated that they were divorced or widowed and had no man in the household for whom to make beer/wine. One woman mentioned that her husband became abusive when under the influence of marula beer/wine so she stopped making it. A number of interviewees indicated that they did not use marula for medicinal purposes any more as they preferred to attend the clinic if a member of the household was ill. Similar reasoning was given in the Makhatini study site. In some cases the knowledge to make the beer/wine and crack the nuts was said to lie with the older members of the household, and when they died the household ceased using these products. Some women mentioned that they did not use the kernels because they hurt their fingers or because their fingers were too stiff to crack the nuts. In a number of cases, kernels had been substituted with peanuts, which were said to be preferable. Other respondents merely indicated they were too busy to collect fruit or that they were not 'traditional' and therefore did not use traditional products. Only two households mentioned that they were longer used marula products at home because they were now selling the fruit and kernels.

3.1.6 Trade in marula products

In Makhatini the utilisation of marula was almost entirely traditional. There was very limited trade or barter in any marula products, and the customary taboo on trade on marula beer/wine appeared to be still firmly in place (Cunningham 1985, 1990). By contrast, in Bushbuckridge and Namibia, households were trading both beer/wine and kernels in local markets, as well as selling fruit and/or kernels to external agencies and stakeholders involved in marula commercialisation. Households in Bushbuckridge sold fruit and kernels to the DFID Mine Workers Development Agency Marula Project which is located in the district, and fruit to Mirma/Distell Pty Ltd the producers of Amarula Cream liqueur. Fruit was not sold at all in Namibia, but some households were members of the Eudafano Women's Cooperative, a local organisation that sold kernels to a processing cooperative for oil extraction for the export market. The latter is facilitated by CRIAA SA-DC an NGO (also one of the partners on this research project and responsible for the Namibian household survey reported here). Details of these commercial chains are provided in separate reports (Mander *et al.* 2002, du Plessis 2002). Details on household returns from trading in marula products are presented in the next sections and further discussion on this appears in the conclusions.

3.2 Quantification of domestic use and commercialisation of key products

3.2.1 Fruit collection and use

Gathering and using marula fruit

The process for fruit collection and beer/wine production constituted one of the major differences between the South African and Namibian sites. This difference related to the source of the fruit (fields versus communal land) and the form of tree tenure in place (see Section 3.4), as well as socio-cultural differences.

In South Africa, in both Bushbuckridge and Makhatini, fruit was collected primary from trees in the communal lands by members of households either on their own (mothers) or as a family unit (adult women and children). Sometimes small groups of women from the same neighbourhood would collect together and occasionally men would assist in transporting the fruit home. Collectors usually gathered the fallen fruit in 80 kg maize meal bags making it relatively easy to obtain estimates of the amounts of fruit harvested per collecting trip. The fruit was taken back to the homestead for processing, an activity which was usually undertaken by the primary collector herself, usually the mother or grandmother. On average women were collecting about half an 80 kg sack or approximately 25 - 45 kg of fruit per collecting trip, although some would use wheelbarrows to bring home much more. The average collection frequency was 14 times per month in Bushbuckridge and 20 times per month in Makhatini, with each trip taking between 1 and 2.5 hours. Most collectors mentioned that they would collect fruit from a range of different trees to obtain a mix of sweet and sour fruits. They believed this contributed to a tastier beer/wine. Some households (30 – 40 %) also reported collecting from their own trees in their homesteads and to a lesser extent fields, but in contrast to Namibia seldom collected or processed fruit from other people's trees.

On the other hand, in Namibia, fruit was not gathered as such, but was rather processed directly under marula trees in owners' fields. There were few trees in communal areas, with some respondents even saying that there were no communal areas. The harvesting and processing activity was generally a social event to which neighbours were invited to help and share in the outputs. The groups processing the fruit could therefore be quite large, up to 15 women and children. Men were not involved at all. The volumes of fruit processed were difficult to estimate without direct measurement and consequently no data are available. Basically everything under the tree was used, and, therefore, the quantities processed depended on the production level of the particular tree. In contrast to South Africa, there was no mixing of different fruit flavours in beer/wine production. Households were processing fruit on average about 14 times per month – which is similar to the results from the other sites. However, about one third of households processed marula fruits on an almost daily basis. The frequency of processing tended to depend more on the availability of unemployed able bodied women in the household, on the strength of social ties, and on the abundance of trees in the area, rather than on the number of trees in people's own fields. The processed products were generally shared between the group members such that half, most, or all of the beer/wine is given to the owner

of the tree, and everyone else takes home the nuts with the remaining flesh, which can be made into juice or fermented. This process ensures that the benefits from privately owned trees are more widely distributed amongst community members.

The volumes of fruit collected per household per season in the South African sites were surprisingly similar between the two sites. In Makhatini the average quantity of fruit collected (across all households including non-user households) was 1500 ± 177 kg, whereas the figure for Bushbuckridge was slightly less at 1200 ± 121 kg. In both sites there was large variation in the amounts of fruit collected between households from a minimum of 9 kg in Bushbuckridge and 12 kg in Makhatini to a maximum of 6400 kg in Makhatini and 7100 kg in Bushbuckridge. Households collecting large amounts were going out on an almost daily basis. Similar high levels and frequencies of collection have been reported in Swaziland (Thiong'o and Edje in prep), although the quantities obtained in this study were greater than those found for another part of Limpopo Province by Ireland (1999). One reason for this disparity could be that marula was relatively scarce in the area that Ireland worked (also see Shackleton and Shackleton 2002).

In Bushbuckridge and Namibia the main use of the fruit was said to be for beer/wine production, whereas in Makhatini the most important use of the fruit gathered was for the kernels. In Bushbuckridge, 18 % of households indicated that the main reason they had collected fruit was to sell it. Overall, about one third of households in Bushbuckridge were selling fruit to the commercial producers (see above). No one sold fruit in either of the other two sites.

Fruit sales in Bushbuckridge

About 31 % of households interviewed were selling fresh fruit to either Distell/Mirma in Phalaborwa (Amarula Cream liqueur) or the Mineworkers Development Agency (MDA) marula project at the Mhala Development Centre (MDC) in Thulamahashe. No one was selling fresh fruit to any other buyers. The numbers of households selling varied quite widely across sample villages, with more households in Edinburgh (one of the supplier villages for the Distell Pulp Factory in Phalaborwa) involved in sales than in any other village. In Hokwe, only one household sold fruit. This is a consequence of the *induna* (headman) of Hokwe being opposed to the selling of fruit and beer/wine, because of the important cultural and social role these have in village life, and because he feels that price paid is not an incentive to protect the trees nor compensate for reduced household use (from key informant interview done by R. Wynberg). In Allandale and Rolle, 19 % and 31 % of households respectively were selling fruit to MDC. The quantities of fruit sold per household over the season varied between 150 kg (Hokwe) and 1114 kg (Allandale), with an average of 764 ± 156 kg. This is about ten 80 kg sacks per household. At an individual household level the variation was even greater at between 36 and 3998 kg.

The average cash income earned from selling this fruit, at a mean price of R18.16 per 80 kg sack, was R194.23 per household, although income varied considerably in relation to the amounts sold (from R9 to R1016). Although this income is not large, it comes at a time of the year when demand for cash is high due to the start of the new school year. Money is needed for fees, books, uniforms, shoes and stationary, and much of the income earned from marula sales is used for these purposes. Many of the interviewees, however, did complain that the price was poor and did not reflect the

time and effort they put into gathering the fruit. There were also repeated complaints about the poor reliability of both Distell and MDC in terms of arriving to purchase on the agreed days. Due to these delays, the fruit the sellers had gathered would often become overripe and unacceptable, and they would have to go out and collect again. However, costs were non-existent or very low, requiring only labour inputs since the commercial producers came to the villages to purchase. The average cost calculated, excluding labour, was R2.18 per household per season. Most respondents had been selling only for the last 2-3 years, although Distell had been in operation for longer. A more detailed analysis of fruit supply for Distell and MDC is provided in the commercial chain analysis report of this project (see Mander *et al.* 2002).

3.2.2 Beer/wine production

Social and cultural significance of marula beer/wine

In all sites marula beer/wine had a significant role to play in local social and cultural practices and activities. In Namibia, the production process itself is a significant social event (as mentioned above).

"*Women gather under a tree, some of them every afternoon after the hard work in the fields, and make the wine or omaongo while socialising, singing, joking, and gossiping. It's a women's thing. Some also mentioned how making omaongo is a mechanism for teaching girls how to become women*" (den Adel 2002).

While socialisation at this processing stage does not happen to the same extent in South Africa, the drinking of marula beer/wine is an important social and cultural activity in all three sites.

In the past, first fruit ceremonies, at which the first marula beer/wine of the season was drunk, were celebrated at national and local level to give thanks to the ancestors and to mark the beginning of the season of growth and abundance. Although these are seldom practiced any more, people still gather at either village (presentations of beer/wine are still made to the traditional leader and he often calls a party) or household level to drink marula beer/wine, chant, dance and generally celebrate. There is often a feeling of festivity in rural villages during the marula season, and the marula drinking parties are of particular importance in building and cementing social bonds with neighbours and relatives, as well as in acknowledging their support over the previous year. Individual offerings of beer/wine, placed at the foot of *S. birrea* trees, are also often made to the ancestors, although again, due to the influence of the modern Christian churches, this is not as widely practised as it was in the past. In Namibia, specifically, in the past, beer/wine could only be drunk at the headmen's house, where all men were invited to special marula parties. However, since Independence women are also allowed to drink at these events, and there are not only parties at the headmen's house, but everywhere.

Making the alcohol

The procedure for making beer/wine[3] is much the same across all the sites. After a couple of days of ripening to a creamy yellow colour and sweet scent, the fruits are

[3] *Omaongo* in Namibia, *vukanyi* in Bushbuckridge and *ubuganu* in Makhatini.

peeled, usually with a fork or in Namibia a cow horn, and the juice squeezed into a 25 litre plastic container or clay pot. After agitating the leftover nuts and flesh in a little water (skins are also added in Makhatini), the liquid thus produced is added to the juice. This is left for three days (skimmed each day to remove scum) and then drunk immediately. In Namibia, the beer/wine is generally brewed from the pure juice only, with a non-alcoholic drink (*oshinwa*) being made from the remaining nuts and flesh. Sometimes a little sugar is added to the brew. A pure juice fermented drink known as *nhlowa* is also made in Bushbuckridge, but this is usually buried or now-a-days refrigerated until Easter and drunk then. It is much stronger than the beer/wine consumed during the season. In South Africa, the first sample of beer/wine is usually offered to male heads of household in a special spoon shaped gourd reserved for this purpose. In general the beer/wine only lasts for about 3-5 days before becoming unpalatable, unless it is pure juice and specially stored (see above).

Beer/wine making is a fairly time consuming process, especially if this is done by only one household member. In South Africa, women indicated that they took between three and seven hours to make one batch of 20 - 50 l of beer/wine, depending on the assistance they had. Beer/wine was usually made between two and five times per month. In Namibia, it was not possible to estimate the labour requirements for beer/wine production as so many people were involved and the occasion was a social event as well as a work party.

The knowledge to make marula beer/wine is generally passed from mother to daughter, although some respondents indicated that they had learnt to make the beer/wine from their grandmothers. In a few cases, women from outside who had married into the community learnt to make the beer/wine from their neighbours.

Amounts made

The average volumes of beer/wine made and consumed per household were within similar ranges across all study sites. The quantities made did, however, appear to be influenced by the suitability of the season for fruit production. In Namibia, average beer/wine production per household in 2000/2001 (a poor year) was half that of the year before: 146 l as opposed to 245 l. Volumes brewed per household (including non-user households) in Bushbuckridge ranged between 139 $\pm$ 34 l and 311 $\pm$ 96 l across villages, with an average of 227 $\pm$ 42 l across all households and 311 $\pm$ 56 l amongst producer households. In Makhatini the corresponding volumes were 189 $\pm$ 23 l and 253 $\pm$ 24 l respectively.

Trade in marula beer/wine

Marula beer/wine was traded in Namibia and Bushbuckridge, with the trade in Namibia being more established and slightly older than the trade in Bushbuckridge. Trade occurred despite the sales of marula beer/wine being against local customs in both sites. It seems that today, given the high levels of poverty that exist, recognition of the need for cash income has rendered the traditional rules around beer/wine sales obsolete. This situation appeared to be accepted by the traditional leadership in both sites, with one or two exceptions (e.g. in Bushbuckridge one village headman did not support beer/wine sales). On the other hand in Makhatini these rules appeared to be still operating. Only one household interviewed in this site sold beer/wine. The woman was selling from a 50 l container four times a month for eight hours a day, for R3.00 per litre. She started selling two years ago for money for food.

In Namibia, the number of women involved in the marula beer/wine trade varied from sample area to sample area. In Endola, 87 % of women interviewed were selling beer/wine, in Ondangwa 33 %, in Ohangwena 30 %, and in Outapi none of the respondents had ever sold beer/wine. The average was 40 %. Amongst selling households, 46 % started selling beer/wine this year or last year only, while 25 % of them had been involved in the trade for longer than five years. Those households that sold beer/wine, sell on average 22 l approximately four times per month. Seventeen percent of sellers sold beer/wine in the main urban centres only. They go to the open markets with a 25-litre container which they sell for N$4 per litre. Transport costs between N$10 and N$20. They always sell everything they take, though the time it takes to do this varies from five minutes to the whole day. This arrangement is very similar to that found in Bushbuckridge (see below and Shackleton 2002 for an in-depth study of the beer/wine traders). However, in contrast to Bushbuckridge, where no local level village trading occurs, 29 % of traders in Namibia sell their beer/wine locally only. This can be at a local centre of cucashops, a local market, pension market, or on the main road. No transport costs are involved as these places are typically close to seller's homes. The price for a litre is N$2 or N$1 for a smaller cup. The local sellers typically sell five litres per day, less than they would in the urban areas, as most local people make their own beer/wine, or drink it at their neighbours' houses. Twenty one percent of sellers sell only from home on request. This can be a 25-litre container occasionally, or smaller amounts of beer/wine on a more regular basis. The standard price is N$2 per litre. Finally, 33 % of sellers both sell in urban areas, and in the local centres and/or from home.

All selling of beer/wine is done by women, and all money from sales goes to the women, be it the seller, producer, head's wife, or female head of the household. If it's a combined effort between women, the money is often split or spent on household needs decided on together. It is interesting to note that none of the sellers buy beer/wine from their neighbours or a local cucashop to resell it in the urban areas. All the women asked felt that this was bad practice. They could sell for their neighbour, but then the profit would also go to their neighbour.

The fact that beer/wine is sold at a local village level in Namibia but not Bushbuckridge could be attributed to a couple of factors. For example, in Namibia not all village households have ready access to fruit if they want to brew beer/wine, whereas in Bushbuckridge fruit is available to anyone who wishes to use it. There is, therefore, no market for beer/wine at village level in Bushbuckridge. Furthermore, although beer/wine trading is now accepted in Bushbuckridge this tends to apply to selling in the towns or at the side of the main road only. People mentioned that it would be frowned upon to sell beer/wine within your own village. In such incidences the beer/wine should be supplied free.

In Namibia, den Adel (2002) found that the factors determining whether someone sold marula beer/wine or not largely depended on the mind-set of the individual.

"In Endola, we found two friends processing omaongo under a tree. The one was relatively open and talkative, and proved to be a real businesswoman, selling omaongo, kernels, and other agricultural products, while her friend and neighbour, same age, said she couldn't sell anything, because she felt 'shy' about it. Her friend

kept trying to convince her to sell omaongo, and she really needed the money to pay the school fees of her little sisters, but she still felt very uncomfortable about it. Another woman said she started selling omaongo when she linked up with the Eudafano Women's Co-operative, as she suddenly realized that 'everything is money', and she had never seen it like that before".

A similar situation seems to prevail in Bushbuckridge with many of the women selling beer/wine also being involved in other entrepreneurial activities (see Shackleton 2002), and a number being stimulated to sell after the establishment of MDC.

In Bushbuckridge, amongst sample households, some 14 % (much less than the 40 % in Namibia) were trading in marula beer/wine. The average volume of beer/wine sold per season was 415 $\pm$ 108 l. Traders from the survey villages were selling mainly in their closest town, Thulamahashe in central Bushbuckridge. Women from other villages were selling in the other main towns in the district (see Shackleton 2002). Traders were selling about 6 $\pm$ 1.0 times per month, taking 29.7 $\pm$ 4.1 l of beer/wine with them each time. Most were selling for about two months of the season, and would spend approximately five hours per day at the market. At a selling price of R2.50 per litre their gross income for the season was R1038. After deducting transport costs (an average of R8.07 $\pm$ 1.7 per trip), average net income was calculated at R941.81 per trader per season. This is higher than the average net income of R500.25 per season obtained from a market survey of 50 traders. The reason for this was probably because most of the sellers encountered in this survey were selling in near-by Thulamahashe, and therefore had lower transport costs than those interviewed during the market survey (Shackleton 2002). The income generated represents a better return to labour than local wage rates and is more lucrative than selling fruit. It was an important source of income for many of the women involved and was used mainly in paying school fees.

Since most of the beer/wine was sold in the towns there was very little purchasing of beer/wine by rural households in Bushbuckridge. Only 9 % of households mentioned that they occasionally purchased beer/wine. By contrast, up to 42 % of households interviewed in Namibia said they bought beer/wine, with 84 % of these claiming to buy it occasionally, and 16 % saying they bought beer/wine about twice per month. Only one household in Makhatini admitted to buying beer/wine on an *ad hoc* basis.

3.2.3 Kernel extraction and use

Kernel use

Like the fruit and beer/wine, the 2-4 protein and oil rich kernels found in the marula nut are a highly appreciated source of food and have formed an important dietary supplement for rural households from the earliest of times, especially during the lean winter months (Krige 1937). The kernels have a variety of uses and may be eaten whole as a snack or mixed with wild herbs and eaten as a relish, or ground and made into a soup or gravy. The oil can be extracted and used for cooking or as a cosmetic, and the residue either eaten or fed to livestock (Den Adel 2002, Shackleton *et al.* 2002) although, in contrast to Namibia, extraction of oil or the making of cakes from ground kernels is unheard of in Bushbuckridge and Makhatini. In some areas such as

Bushbuckridge there has been some substitution of marula kernels with locally cultivated peanuts. The low oxidative properties of marula oil lend to its commercialisation potential, and this opportunity has been developed by the MDA and CRIAA initiatives.

Kernel extraction and storage: procedure

A high percentage of households in all three sites (100 % in Namibia, 84 % in Bushbuckridge and 81 % in Makhatini) used marula kernels. In Makhatini considerably more households mixed the kernels with relish (94 %) than ate them whole, whilst in the other two sites the proportion of households using kernels for each of these purposes was much the same.

The procedure for extracting the kernels differed between the sites. In all sites nuts left over from beer/wine production were used for kernels, but in Makhatini and Namibia additional, usually rotten, fruits were collected from under trees specifically for kernel extraction (in Namibia, some women mentioned that they deliberately sought out fruits which were known to contain large, tasty kernels). Nearly half of kernels came from this source in Makhatini. In all sites a few households reported that they sometimes obtained nuts from their neighbours. In Namibia 60 % of the respondents mentioned that they would give nuts away to anybody who asked for them, and in Bushbuckridge, approximately one third of households gave away unused nuts to other households. Whole nuts were never sold in Namibia and Makhatini, whereas in Busbuckridge two households interviewed had bought nuts from others, but were using these for commercial rather than domestic purposes.

Whilst the extraction of the kernels is a relatively simple task (see below) it is slow and requires concentration. It is largely the task of the mother, grandmother and/or other female members of the household including children. Only rarely did male members or people from other households participate (in contrast to beer/wine making in Namibia) unless the kernels were being extracted for a special occasion such as a wedding where large amounts were required.

The rate of extraction depended to a large extent on the number of helpers involved and on the skill of the extractors. The average extraction rate for Bushbuckridge was 12.3 ± 1.0 hours per litre of kernels. This is longer than the times obtained in the other sites, i.e. 5.6 hr per l (with a range from half an hour to 20 hours) in Namibia and 7.2 hr per l in Makhatini, but shorter than the 24 hrs to extract an 800 g tin given by Gumbo *et al*. (1990). Across the sites, household were spending between 85 and 100 hours per season extracting kernels. This was usually spread over several months, with perhaps only two or three cups produced per week. However, households planning to sell the bulk of the kernels they extracted would make a more concerted effort and remove the kernels over a shorter period. In Makhatini, even though households were not selling kernels, the nuts were said to be finished after a 'couple of months'.

In South Africa, prior to decortication the marula nuts are spread out in the sun to dry. Once dry, the kernels can either be extracted or the nuts may be put away in a cool, dry place, often in 80 kg maize sacks, and stored until a more convenient time.

Sometimes the nuts are soaked in water or boiled and then dried again prior to decortication. For extraction, the nuts are placed one at a time on a large, slightly hollowed rock (anvil), held with the fingers of one hand and then hit on each side and then the top with a smaller, round rock (hammer). This cracks the nut. The shell is then opened up, and the kernels (most nuts have three kernels but it is not uncommon to find 1-2 or none at all) removed either by hand or using a sharp needle-like instrument. The women frequently hurt their fingers in this process and say it is "a hell of a job". The empty shells, known as *xikangalafula* in Bushbuckridge which is also a slang word for "you are a nothing", are either thrown away or used as kindling. The extracted kernels are stored in plastic buckets or cake/biscuit tins with tight fitting lids. Sometimes they are mixed with salt and left in the sun for a few hours to dry prior to storing. Some women mentioned that it is advisable to open the storage containers now and again to release any condensed moisture. Most households seemed to prefer to store the nuts rather than the kernels as there was less chance of them spoiling. The kernels were also generally used or sold as soon was they were extracted. Where nuts were stored the shelf life was reported to be from a couple of months to one year. The storage time reported for the kernels was similar and ranged from a few months to two years. Most respondents indicated that the nuts would last until the next season (i.e. one year), but that they were usually all consumed or discarded before then.

In Namibia, for extracting the kernels, the women first cut off the 'head' of the nut. They do this by using an upturned axe on which they place the nut, and hit on it with a piece of wood. They then use a flattened needle for taking out the kernels. It is quite common that children help with this last part of the process, after they come from school. In this way the time-consuming task gets done a bit faster, and it adds to the children's nutrition. All of the respondents said they stored the nuts. Average storage time given was 2.8 years. Storage can be done in bags, mahangu baskets, or just inside the room; the main point is to keep the nuts dry. Respondents were more particular about the storage of kernels. The kernels should not be exposed to water and light, and most women stored them in covered clay pots or buckets inside a room. Some women mentioned that one should not touch the kernels once covered, as this would cause them to spoil faster, and one old woman explained that the best way to store the kernels was to put them in a clay pot, cover them with a layer of stones, and then with another layer of clay. Average storage time given was 3.2 months. Ten percent of respondents said they never store kernels as they consume them immediately.

Kernel extraction: amounts

Quantifying the amounts of kernels extracted per household proved more difficult than quantifying the amounts of other products made. Unless they were selling the kernels and knew their incomes, women seldom kept track of the quantities they extracted. In many incidences the kernels were removed from the nuts and eaten or cooked immediately. Extraction was also not a regular activity, and on some days households would produce numerous mugs of kernels while on other days none at all. Ultimately, we requested respondents to try and estimate the amount of kernels they had extracted over the entire year.

In Bushbuckridge, there was little similarity in the amount of kernels extracted by user households between the four sample villages, ranging from an average of 5.6. ±

2.3 l per household per season to over double this at 13.1 ± 3.5 l. The mean across the four villages was 9.5 ± 1.2 l. Variation between households was high ranging from less than 1 l to 100 l (although this value was an outlier with the next highest amount being 40 l). The amounts extracted in Makhatini were similar at 11.8 ± 2 l per season per household. In Namibia, the quantities of kernels extracted were many times higher. The average amount of kernels produced per household per season was 145 ± 13 tins, equivalent to 72 l or 36 kg. All households extracted kernels, but the more female labour available and the more involved the household was in commercialisation, the larger the amount of kernels extracted.

The reason why kernel use in Namibia was so much higher than South Africa is not known, but we speculate that it could be linked to the fact that *ondjove*, the traditional cooking oil made from marula kernels, is a culturally important product used in many traditional dishes in the region. This oil is used by all households and requires the pressing of large amounts of kernels to obtain a reasonable quantity. Generous use of the oil in dishes presented to guests and others is seen as a sign of respect and appreciation. In South Africa oil was not made at all. Other contributing factors could be that: a) kernels form a more important contribution to diet in Namibia due to a scarcity of other food sources (it is the most arid of the sites and in Bushbuckridge a number of respondents mentioned that peanuts have replaced kernels to some extent); b) labour for extraction is more available in Namibia – after the pearl millet harvest making *ondjove* and baskets is the main activity undertaken by women (by contrast some interviewees in South Africa mentioned that they do not have time to extract kernels); and c) the purchasing of kernels by the Eudafano's Women's cooperative has increased the overall level of kernel extraction amongst members (62 % of sample).

The low amounts of kernels used in South Africa suggest that this resource is not being fully exploited and potential exists for further commercialisation without it having any affect on domestic consumption.

Trade in kernels

There was considerable trade in marula kernels in Bushbuckridge and Namibia, but only one household traded in kernels in Makhatini. The mother of this household was selling from a 100-litre container of kernels, at R2.00 per litre over the season. She reported spending eight hours a day for one day each week cracking nuts and selling to neighbours making approximately R200 over the season. Selling was motivated by hunger, and income obtained was used for other food items.

In Namibia, the commercialisation of marula kernels seemed to be more 'accepted' than the selling of marula beer/wine and more households were involved in the trade than in Bushbuckridge. Local sales also appeared to be more common than in Bushbuckridge. Sixty two percent of households were selling kernels with 38 % of them having started 10 years ago or longer. On average households commenced selling kernels 7.4 ± 1.2 years ago. The average amount sold per season was 72 ± 11 tins (36 l or 18 kg). The price per tin was N$2.00 (N$4/l) if sold locally or in the urban areas. Selling to the Eudafano Women's' Co-operative earned sellers N$3.70 per tin (N$7.40/l) (recently raised to N$4.25 per tin or N$8.50/l). Still, more than half of households sold only from home (14 %) or on local markets (37 %). Some of these households did not know about the option to sell their kernels to the co-operative, and

were intending to become Eudafano members once they understood how the organisation worked. Thirty five percent of selling households sold kernels to the Eudafano Women's Cooperative only, whilst 14 % sold both to Eudafano and their neighbours locally. The advantage of selling the kernels locally was that sellers receive the cash immediately, whereas the Eudafano Women's Cooperative only buys twice per year, and payment is received some time later. Average income per season ranged from N$144 to about N$266 depending on where traders were selling. As with marula beer/wine, processing and selling marula kernels is done solely by women, and the money received for the kernels is controlled exclusively by women as well.

In Bushbuckridge, just over half of households sampled had sold marula kernels within the last two years. The majority of these sold to MDC in Thulamahashe, and had only started selling in the last two years (94 %) as MDC became operational. Five respondents had started selling kernels prior to this, and sold within the village to neighbours and passers by. The mean amount sold per household per year was 10.7 $\pm$ 1.9 l, a third of what was sold in Namibia. The purchase price for a 500 ml tin offered by MDC was considerably higher than in Namibia at R12 per 500 ml tin. On average, selling households earned R120 and R325 per year across sample villages. However, individual household incomes varied quite widely from as little as R11 to as much as R1900 depending on how much effort households made to take advantage of this opportunity. Three households hired help to assist with extraction so to decrease the time taken to fill a container. In all instances it was a relative, either a sister or a daughter. A further five households received assistance from neighbours, for which some payment in kind was provided, such as extracted kernels, whole nuts, or a mutual assistance in extracting the kernels from the neighbours' fruit. Four households reported selling whole nuts to others wishing to extract kernels.

Despite the commercialisation of kernels traditional practices still prevail. Eighty three percent of households interviewed in Namibia said they sometimes gave kernels as a gift to friends, neighbours, and relatives. In Busbuckridge this was 25 % of households. Being involved in the sale of kernels therefore does not appear to have had a negative impact on the sharing of this resource between women within the community.

In terms of purchases of kernels, 52 % of respondents in Namibia reported sometimes buying marula kernels, whereas only 11 % did in Bushbuckridge. For most buyers, purchases only happened occasionally. People bought a few tins or mugs when they did not have time to extract their own or when they got unexpected visitors and did not have kernels to make them a special meal. Kernels were bought from neighbours, local shops or street vendors for N$2 per tin or R2 – R5 per mug. In Namibia, 23 % of buyers said that they had bought a larger quality (10-100 tins) once or a few times. If one buys 20 tins or more the price can be negotiated down to N$1 per tin. Larger amounts of kernels are typically bought for weddings or other festive occasions. Only one respondent bought kernels on a regular basis. This concerned a household with a very old grandmother and many children. She could not see properly and was unable to decorticate the nuts herself. She bought five tins of kernels every month at the pension market.

3.3 Access, control and tenure issues

One of the key differences between the Namibian and South African sites relates to the tenure and access arrangements around marula and the consequences of this for certain aspects of use (see above sections particularly fruit collection and beer/wine production). In Namibia, the main source of fruit was from people's fields, while in South Africa it was from the communal lands, although marula trees were also found in 'private' space in these sites. In all the regions, trees in fields and homestead plots were seen to be the private property of the field or homestead 'owner', and any products from these trees could not be accessed without the permission of the owner.

3.3.1 Main sources of marula fruit and other products

In Namibia**,** most marula trees were found in people's fields, as well as just outside their homesteads. There were few trees in homestead plots, as the space there is limited. There were also few trees to be found in the communal areas, with some respondents even saying that there were none at all. Approximately 5 % of households did not have any marula trees in their fields, while 23 % of respondents stated not owning any fruiting marula trees at all. Thus, in Namibia, due to a lack of trees within communal areas, about one quarter of households only have access to marula fruits and other products from this species through the good will of their friends and neighbours (see Section 3.3.3 below). While there are strong traditional systems and institutions in place to ensure the sharing of this resource, there is always the chance that some people may be excluded or denied access to fruit, and there is concern that this may increase with rising commercialisation and value of trees to individual households.

By contrast, in both South African sites all households have access to a large marula resource in the communal lands, and this is their primary source of fruit and other marula products. There appears to be an abundance of fruit and it is at the discretion of individual household members as to when and how much they collect. Individual households also own trees in their fields and homestead plots, but because others have access to trees in the communal areas, the harvest from these 'private' trees is usually reserved for the household concerned, unless someone specifically asks if they can harvest and are granted permission (see below). Any important consequence of the availability of trees within communal areas in South Africa is that the resource is accessible to anyone who wishes to use it, thus presenting opportunities to even the most marginalised of community members. There are no restrictions on harvest amounts and the process works on a first come first serve basis (the reason why many women rise at or before dawn to collect). The draw-back is that the fruit is an open access resource and can be collected by anyone including those from outside of the immediate community (see below).

3.3.2 Density of trees on private land

In Namibia, the average number of marula trees found in fields was 7.1 $\pm$ 0.9. On average four of these were female, two were young trees, and one was male. There were few trees in homesteads to count. Tree density in fields was higher than for the other two sites (see below).

In Busbuckridge, the majority of households (78.9 %) had at least one marula stem in their homestead plots, and 58 % had at least one stem in their fields (if they had a field). The average number of trees per plot was 2.7 $\pm$ 0.3, whilst the average number of females was 1.2 $\pm$ 0.1. Thus, the overall gender ratio of adult trees was skewed in favour of females, with one male to 1.4 females. The mean density of stems per hectare in residential areas (10.8 $\pm$ 1.3) was greater than that in fields or the communal grazing lands (Shackleton in press).

In Makhatini, 48 % of households had one or two marula trees in their yard, and of these approximately 60 % were fruiting, tending to indicate that people situated their homesteads near a fruiting marula tree after resettling in the area following the creation of the irrigation scheme. Only one household had more than two trees in their yard. On average, 41 % of households with fields had one or more marulas in their fields (with about half of these having three or more trees), with about 45 % of the trees being fruit bearing.

In both Bushbuckridge and Makhatini a higher percentage of households reported having no marula trees in their homesteads or fields than in Namibia.

3.3.3 Sharing the 'private' resource

In Namibia, systems for sharing the marula resource amongst the entire community are more institutionalised and part of traditional village life than in South Africa, as has been described for fruit harvesting and beer/wine making in the above sections. The lack of trees in communal areas appears to be the main reason for this, although it should also be noted that communities have been resident for much longer in the Namibian site. All households that have fruiting marula trees let other people share in the harvest from them. This is generally done as a large group activity and is an important social event. In principle, anyone that asks may be permitted to join the harvest, but in practice only neighbours and friends do so. As mentioned in the section on beer/wine, if one harvests in somebody else's field, one has to 'pay' half, most, or all of the marula beer/wine to the owner of the tree, depending on the cultural tradition in that area. Consequently, non-tree owners are always going to be restricted in the quantities and types of products they have access to, although all participating households receive nuts to take home. Unauthorised use of fruit (theft) was not an issue in Namibia whilst it was raised in both the South African sites.

In Bushbuckridge, although trees in people's 'private space' were regarded as belonging to the particular household, just under half of the respondents at Allandale, Hokwe and Rolle permitted other people to harvest fruit from trees in their homesteads or fields, while less than 20 % at Edinburgh did so (the village with the most commercialisation). In most instances harvesting was permitted to relatives and friends or neighbours. Yet, almost one-third of respondents stated that they would allow anyone who asked to harvest. In only one instance was payment made, either via other fruit, or cash. Yet, if the members of the respondent's household collected fruit from somebody else's trees, 12 % said that they paid for the fruit, either with a proportion of the fruit, some marula beer/wine, or general help. Thus, it seems more of a reciprocal relationship than a commercial one. Of particular concern to many households was the growing incidence of theft of fruit from trees in fields, and to a

lesser extent, homesteads. Over one-third (37.3 %) of households said that fruit had been removed from their trees without anyone first asking permission. Many people said that theft of fruit was unheard of just a few years ago. Some felt it was because of the commercialisation of the fruit and beer/wine, and that people wishing to increase their cash income stole fruit.

In Makhatini, only 15 of the 63 interviewed households (23.8 %) reported that they allowed other people, mostly their friends, to harvest from their trees. Interestingly, 22.8 % of households reported allowing use of marulas by members of other villages. Only one household required payment for fruit harvested, and this household requested payment in marulas. None of the households interviewed harvested fruit from other people's yards, and 3 % reported that, according to customary law, marula trees which you cannot harvest from are those in other people's yards. 28 % of households reported theft of fruit from trees within their household area or fields.

3.3.4 Harvesting in communal areas

In Namibia, most people said that they either had no communal lands in their area, or that there were no trees there. Only a small percentage of respondents (13 %) mentioned that it was possible to harvest in communal areas. These respondents said that anybody is allowed to harvest from trees in the communal areas, and that no permission is needed for that. Headmen, on the other hand, claim that trees on the communal lands belong to them, and people have to ask them for permission if they wish to harvest the fruits, and in principle also bring them part of the beer/wine.

Whilst most households in Bushbuckridge had marula trees in their fields and homesteads, nearly all also collected fruit from the communal grazing lands (mean = 84 %; ranged from 78 % at Rolle to 94 % at Allandale). Of the few that did not, 47 % did not use marula, 41 % had enough fruit from their own trees, and the rest did not want to walk too far, or were afraid to harvest far from home. Of those that did harvest from the communal lands, only one respondent stated that permission was required from the *induna* before harvesting there. However, when asked about people from outside collecting the response was slightly different. Two-thirds of the sample in Bushbuckridge stated that people from neighbouring villages or outsiders were allowed to collect, and one third said they were not without first obtaining permission to do so. This is particularly pertinent as outsiders are frequently blamed by Bushbuckridge residents for resource depletion (Shackleton *et al*.1995), and certainly has some basis of fact for some villages (Twine & Siphungu 2002). The results were very similar for Makhatini. Eighty one percent of households collected marulas from communal lands, and those households not collecting from communal lands did not use marulas at all. Like Busbuckridge, no household reported a necessity for permission to be obtained prior to harvesting.

3.3.5 Rules and regulations around marula

<u>*Chopping of trees*</u>

In all sites there were rules against the chopping of fruit trees including marula. What was not clear was whether these were customary rules or government rules or both, and whether they applied only to the felling of entire trees or to the cutting of branches as well.

In Namibia, the ban on chopping was perceived to be a government rule and 80 % of respondents knew about it. All of them felt it was beneficial, especially for marula, as they want to protect this important resource. One respondent felt, though, that they should have the right to cut trees that were obstructing other land-uses. Others said that they would never cut a marula tree, especially a fruiting one, regardless, unless it was absolutely necessary. Ninety percent of respondents who knew about the rule said they complied with it most of the time. However, in a later question, some 27 % of interviewees said that their household had cut marula trees or branches. In all cases, the trees were cut in people's own fields, and the reasons given for doing this were quite varied and included: removal of male trees from space they wanted to cultivate, provision of fodder during times of drought; removal of old, diseased or damaged trees, thinning of small trees, and grafting of female branches onto male trees.

The situation in Busbuckridge was similar. Just over half (53.2 %) of respondents stated that there were government and local rules preventing the cutting of marula trees. Generally, the perception was that felling of marula trees in communal lands was prohibited, but some felt that male trees could be cut, and that the prohibition applied solely to female trees. Most believed that marula trees within homestead or arable plots could be cut without fear of sanction, although a few respondents said the ban applied in this situation as well. Several respondents stated that male marula trees were useless because they did not produce any fruit, and agricultural extension officers in the region have been known to actively encourage the removal of these trees from arable plots. A similar situation was reported in Zimbabwe (Campbell *et al*., 1991; Chivaura-Mususa *et al*., 2000).

Like Namibia, the vast majority of interviewees thought that the rules were a good thing, although many felt that compliance was dwindling. Most households claimed to comply with the rules, and if they did harvest wood from marula trees, it was dead wood. It is probable that some respondents would have been uncomfortable with telling us that they ignored the rules. Nonetheless, taking the figure given, at least one in twenty households do not comply with the traditional or government rules against the felling of marula trees on communal land. When specifically asked whether they had ever cut a marula tree, over one-third of respondents responded positively. Like in Namibia, a large number of reasons were provided for this, the most common of which was for firewood. Many respondents qualified this by stating that they only cut male trees, never females, or that they cut only branches. The second most frequent reason was that the tree was too close to their house or fence and they removed it or pruned it to prevent it falling on the house or fence. Other reasons included using branches for other purposes, e.g. fencing, propagation, fodder and because the tree was a danger to the household (lightening, snakes). In the group interviews it was mentioned that branches are frequently cut to obtain edible caterpillars.

In contrast to Namibia and Bushbuckridge only 1.6 % of households in Makhatini reported that there were government regulations banning the cutting of marula trees. However, cutting did not seem to happen and there appeared to be a customary law against this. Only 8 % of respondents admitted to cutting marula trees. The most frequent reasons for cutting marula trees were either clearing to build housing or for carving. All trees cleared for housing were within the household fence and all trees cut for carving were from the communal lands. One respondent reported trimming

branches of trees in the fields so that tractors could pass easily beneath them. However, in one field on the floodplain there was observed to be eleven trees in all, three of which were ring-barked and dead and another two ring-barked and still alive and fruiting.

Access to trees in public space

Many marula trees occur on roadsides, in spaces between houses, in school grounds and other public spaces other than the communal lands. We tried to gain some understanding on how this resource was accessed and shared. One question we asked was whether households could claim rights to trees that are close to their fields or homesteads, but not actually in them. The answer to this was very mixed in all three sites. In Namibia, 27 % of respondents replied positively, 5 % said no, and the largest part (68 %) had no idea. In Bushbuckridge, whilst there was some disagreement, the majority of respondents (55 %) stated that households could claim exclusive rights to trees and fruit from public/communal land if the tree was close to their homestead, either on the roadside near their fence, or on unused land. In some instances rights were claimed by people being the first residents in an area. The remaining 45 % stated that exclusive rights could only be established over trees within private space, namely the homestead or arable plot. In Makhatini, 84 % of respondents stated that one may not claim ownership of a tree close to, but outside, one's yard. Thus, individual tenure over trees next to one's homestead was strongest in Bushbuckridge. This was picked up in previous surveys (Shackleton *et al*. 1995), and the arrangement is usually a tacit one between women within the neighbourhood. Apparently it is important to ask the 'owner' for permission to harvest, just as if the tree were in their homestead. Where this situation does not apply it appears the fruit is accessed on a first come first serve basis.

We also asked whether there were any trees that people were not permitted to harvest from at all (e.g. sacred trees, trees in sacred sites). Some 95 % of respondents in Namibia said that there were no trees from which they were not allowed to harvest at all, 2 % had no idea, and 3 % said they were not allowed to harvest marula from trees that belonged to their King (Ondangwa area). In both Bushbuckridge and Makhatini there were no trees from which people were prevented from harvesting other than, of course, trees on 'private' land.

3.4 Customary norms, practices, ceremonies and cultural importance

The customary practices, norms and traditions around marula harvesting and use of products varied from region to region, and were much stronger in some areas than others. However, in all sites these were mentioned to be less significant or weaker than they were in the past. Certainly, past traditions such as first fruit ceremonies which were part of both *Tsonga* (Bushbuckridge) and *Zulu* (Makhatini) culture (see Shackleton *et al.* 2002, Shackleton 2002) were no longer practiced. The custom of presenting the chief or headman with the first of the marula brew was also not widely adhered to any more, or where it was, it was less ceremonious and ritualistic than it was in the past. That said, however, in all sites marula was still seen to be a key component of local culture and neighbour parties are frequent and ubiquitous between all sites.

3.4.1 Marula harvesting

In Makhatini, the only tradition reported on marula fruit harvesting by a couple of households was that marulas should not cross a river, as they lose their strength and potency when brewing beer/wine. In Bushbuckridge, a few people mentioned that: a) marula fruits must not be collected before the 1st of December, b) fruits must only be collected from the ground and not from the tree, and c) that marula fruits must not be sold. In Bushbuckridge, there was also some debate whether the prohibition on cutting was a traditional rule or government rule. Certainly, the *induna* and his advisors and 'police' were responsible for enforcement as well rangers from the local nature conservation office, although some stated that the community at large is also responsible for enforcing such rules. There was a widespread perception that this traditional law was not adhered to now as much as in the past, largely because with a democratically elected government, the power and respect of the chiefs and *indunas* was eroding. Other reasons provided included selfishness as people had less community cohesion and respect, as well as outsiders ignoring the rules, especially Mozambicans. Mozambicans are often blamed for any ills within local society, particularly in association with natural resources (L. Yeatman, pers. comm.).

3.4.2 Ceremonies and other traditions

Unlike Namibia and Bushbuckridge, there appeared to be no special ceremonies, or special traditions around marula in Makhatini. Perhaps one reason for this is that different groups of people had been recently resettled into the area. Like the other two sites, however, neighbourhood marula parties did occur.

In contrast, in Namibia, 73 % of respondents indicated that there were traditional norms and practices governing the use of marula. They mainly referred to the 'time of no weapons', the traditional rule that prevents people carrying any knives or other weapons during the height of the marula season. It was installed to prevent community members from seriously injuring each other in heated, drunken arguments. At the same time the traditional court closes, and all court cases are postponed until after the marula season, when all people involved have their common sense back. Most respondents (66 %) mentioned that this rule continues to be enforced. The headman informs everybody about it in a meeting at the beginning of each season, and then people monitor themselves. Some (11 %) also said that there are people elected for the task of enforcing this rule, or (5 %) that the sub-headmen take care of this matter. On the question of whether people comply with this traditional law in the same way as they did in the past, 61 % of the respondents answered positively. 14 % did not know, and 25 % said that people did not. Reasons given for the diminishing compliance of traditional laws were: changing times (36 %), money/development (9 %), no enforcement (9 %), and the fact that some people just don't care (36 %).

In addition to the above, 62 % of respondents said there were special ceremonies around marula in their village. Most of them (57 %) referred to parties at the headman's or King's house, often at the beginning of the marula season where the first fruits or first beer/wine is presented. Others said it mainly concerned more informal parties, with many traditional dances and songs. Those who responded negatively said that there used to be marula ceremonies at headmen's and Kings

houses, but that that tradition had died out. They wouldn't describe the informal parties among neighbours as ceremonies.

In Bushbuckridge, in terms of traditional ceremonies involving the use of marula, data on individual frequencies were not obtained since the question requested respondent's to state if they engaged in any ceremonies or even if they did not, knew of others in the village that did. Even so, it seems clear from the data, group discussions, and survey interviewer observations and impressions that the majority of households participate in at least one of three types of ceremonies described below.

Xikuha *(presentation of beer/wine to induna):* This is a common practice whereby most households (64 %) that brew marula beer/wine contribute a specific amount (either 2 l or 5 l; differing between villages) to the village *induna*. This is done at a date and place specified by the *induna*, and all households gather together and offer the beer/wine to the *induna*. After a ritual tasting, all the beer/wine is combined into large containers, and community members present then celebrate together. The timing of the celebration seems variable; some respondents saying it is at the start of the season, others stating it is at the end, and other responding that it could be any time in the fruiting season. In some villages the ceremony is at the *induna's* house, at others it is at some other designated place. Sometimes an ox may be slaughtered, but this is infrequent. Many argued that attendance was compulsory and that absentees would be fined (either R2 or R5 depending upon the village). However, other households said that it was not compulsory; one was expected to attend, but there was no repercussion if one did not. For example, those households who were members of the Zionist Christian Church, which prohibits the consumption of alcohol, were exempted.

Kuphala *(offerings to the ancestors):* This ceremony relates to an offering of marula beer/wine to the ancestors, although the term *kuphala* is a broad term and does not necessarily relate to only marula. About 32 % of respondents mentioned that *kuphala* was practiced. According to some, it has to be done under a marula tree, and hence can be construed as an offering to the tree. Many respondents seemed to be at pains to indicate that they themselves did not practice *kupahla*, but that they knew of others who did. It was often pointed out that their grandparents practiced *kupahla*, but the younger generation no longer did so. This may be linked to a perception that this is an out-moded practice in the modern world, suggesting a household is 'backward' or 'unchristian', and hence some respondents may have been unwilling to indicate that members of their own household observed this practice. The demise of this practice was linked to a number of factors including: the influence of Christian churches which frowned upon ancestor worship and traditional practices; the erosion of the authority of traditional leadership as the primary institution for maintaining and promoting traditional norms and beliefs; and the influence of the modern world and outside cultures, especially the notion of the demise of community cohesion and hence disrespect for "the old ways".

Xirhwalo *(neighbourhood parties):* Since this is not really regarded as a ceremony, it was not specifically prompted in the household interview schedule, but was mentioned by several households (30 %) in each village. Other households described this practice elsewhere in the interview, did not give it a specific name, or did not view it as a traditional ceremony. For example over 80 % of households said they 'gave beer/wine away' by inviting other villages over to share it. *Xirhwalo* was

described as a gathering of friends and relatives at the household where marula beer/wine has been brewed. The celebration may span several days, and when finished, participants may move on to another house of relatives or friends in the same community. It is for this reason that many households brew such large quantities of marula beer/wine. In some households, the first beer/wine of the season has to be brewed by the spouse of the eldest son. The family then gathers to taste this beer/wine. Once they have done so, the wives of the other siblings can brew their own beer/wine.

Such parties also occur in Namibia and Makhatini (see above), but similarly are not really regarded as traditional ceremonies. In all sites, however, they are viewed as very important, with much of the reservation around marula fruit and beer/wine commercialisation being linked to a concern that these gatherings would diminish under commercialisation pressure with a resultant loss in community cohesion and cooperation. The key role that these events play in building social networks and reciprocal relations is well illustrated by the fact that a number of non-beer/wine drinking households (headed by single women) in Bushbuckridge made beer/wine with the sole intention of throwing a party and inviting neighbours around to drink it, knowing that they could draw on these same neighbours later in the year for support and assistance if necessary. These parties also draw distant family members, particularly those from urban centres, home and thus help build family bonds and ensure the continuation of important rural-urban linkages. Many of our respondents mentioned how their homes were always full of visitors during the marula season, and how few of these visitors come empty-handed. Thus it is a time for giving and receiving.

3.4.3 Special indigenous knowledge on marula

In all the sites it appeared that most people felt that there was no special, local knowledge on marula that only certain community members knew about. In some instances a few things were mentioned. In Namibia, a few respondents mentioned that the use of medicines, hair relaxer, and oil, were only known by older women; not because it concerns secrets, but because the younger people are not interested in learning about them. What knowledge people had they appeared willing to share in all the sites.

3.5 Perceptions of availability of the marula resource

Perceptions of marula fruit and tree availability was again an area of major difference between South Africa and Namibia, and could be related to the tenure arrangements and lack of trees in communal lands in Namibia as described above. In Namibia people perceived a scarcity of this resource, whereas in South Africa most households in both sites felt that there was more than sufficient fruit and enough trees to meet people's current needs although there was some concern for the future amongst a small proportion of households.

3.4.1 Availability of marula

In Namibia only 23 % of respondents believed there was enough fruit for everyone who wished to collect. This contrasts with 83 % in Bushbuckridge and 81 % in Makhatini. The 75 % of respondents in Namibia that felt that there not enough marula for everybody claimed that there are many people that did not have even one marula tree, or that those who had trees needed more of them, as it is such an important resource. However, when asked whether the available trees would be enough for home consumption, if there was no commercialisation, most replied positively. In Makhatini, amongst the small percentage of people reporting a shortage of fruit, 40 % attributed this to too many people, 40 % to people stealing the fruit (mostly from own fields or homesteads), and 20 % did not know the reason for this shortage. It is interesting that in Makhatini fruit is being stolen despite the lack of commercialisation in this site. Amongst the 14 % indicating a shortage of fruit in Bushbuckridge, numerous reasons were provided for this including: a view that there were too many people, which resulted in loss of land and trees to homesteads and fields; the cutting of marula trees for firewood; that there were too few trees; the theft of fruit; sales of fruit; and that some trees were dying. It is interesting that a few respondents in both sites with commercialisation believed that this was having a negative impact on fruit availability.

3.4.2 Trends in tree density over recent past

It was interesting to note that in Namibia, despite a perception amongst most households of a shortage of fruit, the majority of people felt that tree densities had increased. In South Africa, the trend tended to be in the opposite direction with most households being neutral or perceiving that tree numbers had decreased.

For example, in Namibia, 81 % of households perceiving a change in marula populations referred to a change in the positive sense, while 19 % felt that the number of trees has decreased. Reasons given for an increase in the number of marula trees were: natural growth (87 %), planting of trees by people, and the availability of more seeds because of intensified marula processing. Reasons given for a decrease in the number of marula trees included: trees died naturally, parasites killed some, lack of rain, and trees were cut by government for the development of roads, etc. Similarly, 75 % of the interviewed observed a change in the number of seedlings, positively (93 %) or negatively (7 %). 13 % saw no changes in the number of seedlings, and 12 % of the respondents were not sure. The main reason for the increase was again said to be natural growth (88 %). Other reasons given were: people like them, people planted them, and good rain. The only reason given for a decrease in marula seedlings was the lack of rain.

In Makhatini, on the other hand, there did not appear to be any consensus on whether the availability of seedlings or marula trees had changed over the last 10 to 15 years. Most respondents reported no change, but a surprisingly high percentage (41 % for trees and 32 % for seedlings) did not know whether there had been a change or not. This indicates that these people either had not noticed or experienced a shortage of trees, and therefore did not note a change in numbers. Of those who had noted a change an almost equal number indicated trees had increased or decreased.

In Busbuckridge, there was also uncertainty on whether or not the availability of marula trees had changed over the medium-term, i.e. the last 10 – 15 years. At all the villages other than Edinburgh more respondents perceived a decline in availability than either no change or an increase. Overall, just over one-third of respondents felt that there had been a decrease, with a similar proportion arguing that there had been no change. A small minority (16 %) felt that the availability had increased over the same period. Of those citing a decrease in availability, most (73 %) attributed it to the cutting of marula trees either for firewood or for clearance of arable fields. The next most frequent response was "don't know" (12 %), followed by a number of other reasons offered by only one or two respondents. These included an increase in fire, a decrease in fruit and hence seedlings, too many people, storms and God. Reasons for an increase were not examined because of the low sample number and that the most frequent response (36 %) was "don't know". There was even less agreement in terms of perceptions of changes in availability of marula seedlings, with equal proportions of respondents stating that they had increased or decreased, and slightly more responding that there had been no change. There was no consistent pattern of responses across the four villages. Of those that felt there had been a decrease, many (29 %) could not identify a cause. The two most commonly cited causes were the clearing of fields for agriculture (18 %) and a decrease in fruit and hence less germination (18 %). Of those suggesting an increase in marula seedlings over the period, most (56 %) attributed this to the actions of people dispersing the fruit stones. Other answers included "don't know" (24 %), increased rainfall (11 %) and reduced cutting of trees by law and hence better germination (12 %).

3.6 Cultivation and nurturing

Planting of marula and nurturing of self-germinated seedlings was reported in all three sites, but was highest in Bushbuckridge. Of significance is that there is some culture of tree planting that can be built on. In all sites, marula has been cultivated via seed, transplanted seedling and truncheon.

In Makhatini, only one of the sixty-three households interviewed reported planting a tree, using a seedling dug up elsewhere. The tree died for unknown reasons. Several households (19 %) on the floodplain reported nurturing seedlings which had germinated naturally in their homesteads or fields. Few households reported watering or fertilising the tree, but all provided some sort of protection from grazing or trampling by goats or cows.

In Namibia, despite the fact that 75 % of the people interviewed felt that there was a shortage of marula, only 22 % had ever tried to plant one. Upon questioning that, many people replied that they grew up with the idea that indigenous trees just grew naturally, and that they don't know how to plant a them. Of those households that did try to plant a marula tree, more than half had used a truncheon, slightly less than half had tried with a seed, and about a third had planted a seedling. They all planted the tree(s) in their own field, or either in or just outside the homestead. Reasons for planting were mainly that marula is seen as a productive and favourable resource. One respondent was planning to grow a live marula fence around their homestead. A few more households (35 %) had protected young trees. These young trees were all in their own fields, often close to their homesteads. Most of them responded that there

are no problems in looking after young trees. Only a few mentioned that water may be a problem, and that animals wanted to eat the seedlings during the dry season, and may even destroy a small fence for that.

By contrast to the above, the planting and nurturing of marula trees was much more common in Bushbuckridge. Just less than one-third of households claimed to have actively planted a marula tree. Contrasting with Namibia, this was mostly within the homestead (90 %), with the remainder in fields, kraals and fences. The most common means of establishing a new individual was by planting a marula seed (44 %), usually from a tree with desirable characteristics in terms of size, fruit production or fruit size and quality. But transplanting of 'wild' seedlings was not uncommon (26 %), nor was the use of truncheons (30 %) as propagation material. Of note was that the primary reason for planting a marula tree was not for the fruit but for shade. This reason was supplied by half of the respondents. Fruit was the second most common reason (28 %), followed by the need for a windbreak (9 %). Other reasons provided by only one or two households included aesthetics, live fencing, a washing line, and being able to honour ancestors. A greater proportion of households participated in nurturing small seedlings that grew up in their fields or yard, than actively planting new trees (53 %). Only 10 % of respondents that did nurture seedlings stated that there were any problems in doing so. Only two problems were mentioned, namely browsing by cattle or goats (mentioned by all those saying there were problems) and that seedlings often die, presumably from lack of water (mentioned once).

4. CONCLUSIONS: CONTRIBUTIONS TO LIVELIHOODS AND IMPLICATIONS FOR COMMERCIALISATION

4.1 Present use of marula and importance in local livelihoods

4.1.1 Place in overall livelihood portfolio

Marula makes a key contribution to people's livelihoods in all the sites and is used by the majority of households. All three regions are characterised by high levels of poverty and unemployment and conditions that are, on the whole, not conducive to wide-scale farming with the possible exception of Makhatini (see Section 2). Communities and households across the sites thus engage in a wide variety of livelihood activities, and most households are reliant on many different sources of income, both cash and in kind, to meet their daily needs. Farming opportunities are generally limited due to poor soils, unreliable rainfall, a scarcity of land, and a shortage of cash for inputs, although most households grow some crops for subsistence purposes. Jobs in the formal sector are becoming increasingly difficult to find and retrenchment is intensifying. In terms of informal income generating opportunities, individuals wishing to engage in this sector often meet numerous barriers, e.g. access to finance and distance from markets, that prevent their participation (see Shackleton 2002). Natural resources and NTFPs therefore continue to play a crucial role in local livelihood systems, and form an important component of the complex, multiple and diverse livelihood base that is so characteristic of many households in southern Africa (Dovie 2001, Shackleton and Shackleton 2000, Shackleton *et al.* 2000a, 2000b). Data on the variety of NTFPs used by households in

the study area indicate that use continues to be as high as it was in the past, with few households not being dependent on at least one natural resource.

The need for cash income and escalating costs of living have also resulted in a dramatic growth in the trade of natural resource products in recent years (Shackleton *et al.* 2000a, Campbell *et al.* 2001) as evidenced in, particularly, the Namibian and Bushbuckridge sites. Even in Makhatini a couple of households indicated that they sold marula products, despite traditional taboos, because they were "hungry". Thus, progressively more households, in particular those without any formal income, are turning to what is freely available in their environment in an attempt to earn a living. There is much evidence, both within Bushbuckridge and Namibia and in other parts of the region, of 'endogenous' commercialisation of resources that were traditionally used for subsistence purposes (Shackleton and Shackleton 1997, Shackleton *et al.* 2000a, Shackleton *et al.* 2002).

Of the indigenous resources that people in all three regions are using and trading, marula is regarded as one of the most important and most widely used. Its uniqueness lies in the fact that there are so many uses for the tree and its fruits. From the shade of the tree to the burning of the empty nuts as a source of fuel, people are using all of its products, and the importance of marula stretches from the social, to the cultural, the economic, and the nutritional aspects of people's lives. Despite its seasonality, marula was used by more than 90 % of households in all sites, with the main uses being for beer/wine and kernels, and, in Namibia, kernel oil. In Namibia, all (100 %) interviewed households made marula beer/wine, juice, cooking oil, a kernel 'soup', and they mixed the kernels with other food, and about 98 % of households ate the fruits, the kernels, and the cake, and use marula wood as a source of fuel. Here, marula is such an intricate part of people's lives one cannot imagine a life without it. The average quantities of fruit used (about 1.2 - 1.3 tonnes) and beer/wine made per household per season (between 150 and 400 l) were similar in all sites, although considerably larger quantities of nuts were processed for their kernels in Namibia. Reasons for this are suggested in Section 3.3, with the primary one probably being the widespread production of kernel oil in Namibia: a product that is unknown in South Africa.

4.1.2 Contributions to livelihood capital

Marula contributes to various forms of livelihood capital including:

- human - health, nutrition and food security, entrepreneurial and other skills
- social - sharing of marula beer/wine, cultural significance, reinforcement of local institutions, building of urban-rural linkages, building of social networks
- financial - cash from sales of fruit, kernels, beer/wine and carvings, cash savings on alternatives, and
- natural capital - trees retained, planting of trees, management systems, agroforestry benefits.

Health, nutrition and food security

The nutritional properties of marula are well known (see Wynberg *et al.* in press), and

the consumption of fruit, beer/wine, juice, jam and kernels makes an important contribution to diet and nutrition, especially amongst children. Most rural diets are poor in protein and vitamins, and based mainly on carbohydrates (for example we found most people were only eating meat between 1 – 4 times per month). The marula fruit is particularly rich in vitamin C, and the kernels offer a source of protein and oil that is available in the dry season when food is scarce. Children eat considerable quantities of marula fruit (about 250 per season), and it is likely that this makes a difference to their health especially amongst poorer families who cannot afford to buy alternatives. Recent statistics have shown how more than three-quarters of all South Africans do not have enough food to eat, that one in five South African children suffer from chronic malnutrition, and that about 50 % of children have less than half the daily recommended level of nutrients such as calcium, iron and zinc, with the worst affected being in rural areas (Sunday Times, July 2002). The availability of a nutritious resource such as marula in the savanna woodland regions of the country must have a positive contribution to make in this context.

The majority of households (70 – 80 %) also consume marula kernels to some extent, both as a snack, or mixed with wild herbs as a relish to eat with maize meal in place of meat or, in Namibia, in the form of porridge, soup, cake or cooking oil. While this use might not be as vital as it was in the past when people in parts of the region were said to survive on marula kernels during the winter months (Krige 1937), it does at least provide some variation in diet and is a source of micronutrients that are often lacking in the relatively restricted diets of the rural poor (see Wynberg *et al.* in press for a summary of nutritional properties). In Makhatini, kernels proved to be the most important use of the marula resource and, in addition to consuming these as a snack, most households were eating kernels about three times per week during the evening family meal until supplies ran out. Certainly, the importance of this resource is highlighted by the relatively large amount of time spent extracting kernels for a seemingly small return.

In Namibia, marula beer/wine, which in itself may not be a valued product from a nutritional point of view although the high Vitamin C content is not lost in fermentation, was said to make people hungry, and many respondents indicated how much healthier people look during the marula season, because they generally ate more. The edible caterpillars found on marula also provide a source of protein during the early summer: young men in particular seemed to go out of their way to harvest these caterpillars sometimes cutting whole branches to obtain them (informal interviews, Bushbuckridge).

This nutritional value of marula has been recognised by other role players, and nurses and care group facilitators in Bushbuckridge have been promoting recipes using marula products at care group and women's group meetings. This is where many of the Bushbuckridge respondents learnt to make marula jam.

Social and cultural value

The cultural significance of marula has already been alluded to many times in this report and can be seen in the numerous traditional songs, dances, and stories around marula.

In some areas of Namibia the tradition of bringing marula beer/wine to the Kings and

headmen is dying out but in other areas it continues. In Bushbuckridge, in all the villages we visited, people were still presenting beer/wine to the headman and he still called a celebration, but this tended to be much less formal and ritualistic than in the past and could be attended on a voluntary basis. Such activities have the role of acknowledging and reinforcing traditional institutions and structures, something many regard as important as these organisations come under pressure from modern society.

In an area such as Ovomboland in Namibia, where homesteads are spatially spread, the marula season brings people together, and makes them feel young and happy. In all regions, the giving, sharing and drinking of beer/wine with friends, neighbours and relatives is not only a time for festivity and togetherness, but is also crucial for building social bonds, networks and reciprocal obligations. For instance, if one invites a neighbour to drink marula beer/wine at one's home, then the host is entitled to ask a favour of the neighbour later without having to feel guilty or provide anything in return. Indeed, some women were making beer/wine for this purpose alone, as no one in their household drunk it. This significant social function of marula also extends way beyond the actual fruiting season and is a form of 'insurance' to households who might need to call on their neighbours for support later in the year. Many family members also return home from distant urban areas during the marula season to share in the beer/wine, reinforcing family bonds and ensuring the continuation of the important urban-rural linkages that many households depend on. These visitors also often arrive with many gifts for the household. In Namibia, traditional rules change as well; people are not allowed to carry any weapons during the marula season, and the traditional court closes for those few months.

No other natural resource in southern Africa has an influence on life that is in any way comparable to the impact of marula, and the marula season remains a time of festivity that cannot be compared to any other time of the year. Indeed, it is for all these reasons that some community members are concerned about the potential 'erosive' effects of marula commercialisation on community cohesion and culture (see below).

Income and cash contribution

In terms of contribution to financial capital, marula is one of the resources local people have commercialised. In particular, women are gaining access to income through the sale of marula products. For example, beer traders in Bushbuckridge (about 13 % of the sample) were earning between R500 and R1000 per season (also see Shackleton 2002). Similar incomes were obtained for Namibia. We also encountered households that had been selling kernels and jam, either from home and/or at pension markets, for a number of years. In addition people have taken advantage of the new markets for fruit offered by MDC and Distell in Bushbuckridge, and for kernels by MDC in Bushbuckridge and Eudafano Women's Cooperative in Namibia. Although the incomes earned from the latter were fairly small (on average across villages between R38 and R335 per household per season for fruit and between R119 and R325 for kernels, respondents mentioned that it all counts towards them being able to put food on the table, pay school fees, clothe their children or purchase household goods. A few women mentioned that the cost of maize meal has increased so much in the last two years that they need all the cash they can get even if it is only for a couple of months at a time. It is also of note that, although the average income earned per season from selling fruit and kernels was low (see above), the Bushbuckridge data revealed that extremes in income between individual sellers was

high, from between R8 and R899 for fruit, and R11 and R1900 for kernels. This suggests that households that apply themselves seriously to the sales of fruit and kernels as a form of income generation are able to earn considerably more than those that just sell on an *ad hoc* basis to make some cash on the side.

Due to its highly seasonal nature and the relatively low incomes earned, the financial contribution marula makes needs to be seen in the light of a diverse livelihood base in which each component would, most likely, not be able to provide a sustainable livelihood on its own, but when pooled can help ensure that people are able meet their basic living requirements. Similar sentiments are expressed by Saskia den Adel (2002) for the Namibian site:

"*People can survive on relatively small budgets in the rural areas, but cash is needed for paying school fees, hospitals, basic goods, and supplementary sources of food, especially during years with inadequate rainfall. Almost half of the households in our sample live on an income less than N$250 per month, and in these cases, any additional sources of cash, however limited they may be, are imperative in helping households to pay for their basic needs*".

Amongst some particularly destitute households, the sales of marula products provided one of the few sources of cash income. 'Freely' available natural resources can therefore perform an important safety net function when few other options exist. It was in this context, the first commercialisation of marula resources was seen in Makhatini by two households that desperately required cash to buy food. Commercialisation issues related to marula are dealt with further in the next section.

Other contributions

In addition to its nutritional importance, marula is also used for firewood, fencing, fodder, shade, medicine and in a number of ceremonies and rituals; for example a marula nut tied around a young child's neck or torso helps to ward off disease and evil spirits. Many of these additional uses can result in the savings of cash that might be required to purchase alternatives. All of this adds to the value of this species in the eyes of local people and contributes to the very integral position it has in their lives.

The resource base

The importance of the marula tree and its products for local people can be seen in the way it is retained in the landscape including in agricultural fields (High and Shackleton 2000, this report), in the customs, regulations and norms that surround and regulate its use, and in the fact that at least some households (although greatest in Bushbuckridge) in all three sites have actively invested in planting it, or at the very least in protecting young seedlings that have germinated in their fields and homestead plots. However, while the resource is being maintained, and perceived to be increasing in Namibia, in both Bushbuckridge and Makhatini there is evidence that trees are being felled for fuelwood, woodcarving and in the clearance of agricultural land. Some people were concerned about this.

4.1.3 Equity

Marula in South Africa is a resource that is widely available (there are few shortages of fruit) and accessible to all who wish to use it within village commonages (anyone

can harvest fruit from the communal lands), thus presenting opportunities to even the poorest of community members. The latter is particularly relevant considering that approximately one third of households within the study areas are female-headed, and regarded as amongst the most marginalised and vulnerable of rural households and the most dependent on NTFPs (Arnold and Townson 1998, Cavendish 2000).

In Namibia, the situation is slightly different as already discussed. The fact that everybody uses marula products does not mean that everybody owns marula trees. In the Namibian sample, almost a quarter of the households did not have a fruiting marula tree in their field. Still, because of social structures everybody has an opportunity to benefit from marula. Households with many trees will end up with a larger amount of marula beer/wine than others, and households with more available female labour will have more access to marula juice and marula kernel products, but because of the tradition of sharing labour and products, all households are beneficiaries of the marula resource to some extent. In this situation however, there is a possibility that tree owners may become less willing to share their resource as the profits from trade grow with increasing commercialisation.

4.1.4 Key conclusions: current livelihood contributions

In conclusion, although it is unlikely that the marula tree and its products will be able to solve rural poverty in the areas in which it is found, this NTFP does have a key role to play in meeting a range of livelihood needs from food to cash (see Box 1). The cash injection earned from selling fresh marula products, although highly seasonal, comes at a particularly crucial time of the year, when money is required for school fees, uniforms and stationary. Indeed, most traders use their income for this purpose. Its significant cultural value also means that this species provides a range of social benefits and is important in building social capital. The latter is often more central to rural livelihoods than is generally acknowledged or appreciated. Within the literature there is increasing reference to the breakdown of social capital and reciprocal relations and the emergence of greater individualism often to the detriment of local farming and natural resource management systems and to the poorest members of society (Campbell *et al.* 2001, Paton 2002). Any practices that help maintain or build community cohesion and cooperation should therefore be supported and encouraged. In terms of marula, undoubtedly, there would be a distinct gap in the livelihoods of local residents and their cultural identity across all the sites if this significant resource were to become unavailable.

Box 1: Role of marula

"The time of marula fruiting is a time for the Zulu people to relax and congregate with friends and family to enjoy the natural beer/wine, fruit and nuts and time of plenty" Survey respondent, Makhatini

Source: McHardy 2002

4.2 Marula commercialisation – positive and negative impacts and implications

One of the objectives of this project and the household survey was to assess the effects of marula commercialisation on rural livelihood systems, household income, socio-cultural values and norms, subsistence use, local markets and resource sustainability. We have seen in the above section the important and diverse role that marula has in local livelihoods and in contributing to various forms of livelihood capital. Here, we look more closely at the commercial aspects of marula, particularly

the externally driven initiatives, and consider the positive and negative impacts commercialisation may bring.

With such a widespread, extremely useful and high profile resource such as marula, it is not surprising that it has received attention by researchers, natural product developers, development agencies and the private sector. Research has been conducted on the properties of marula from as early as 1906 (see Wynberg *et al.* in press) with a view to developing new, commercially marketable products. Within the southern African region there are a number of commercial initiatives based on marula (see Wynberg *et al.* in press), with most being driven by development agencies rather than the private sector.

In Bushbuckridge, there are two main commercial enterprises and buyers of raw product from communities, Distell and the MDC project. Distell, a profit making company, buys fruit from local communities and uses it to produce a pulp which forms the basis of their successful Amarula liqueur. The MDC initiative is a donor funded, employment creation project that is attempting to build on the opportunities offered by marula in Bushbuckridge by pursuing new markets for a range of products. They purchase both fruit and kernels from local producers. In Namibia, the set-up is slightly more complex and a formal market is in place for kernels only. Producers sell kernels locally to a cooperative known as the Eudafano Women's Cooperative which represents some 3500 primary producers. This cooperative in turn supplies a contract cooperative, the Katutura Artisans' Project near Windhoek, which is responsible for extracting the oil. The oil is then exported to the UK where it is used in the cosmetic industry. The "Body Shop" has just launched a new range of products based on marula oil from this source. The whole process has been facilitated by CRIAA-SADC. There is no externally driven commercialisation process in Makhatini. However, as already mentioned, households in all sites are also independently trading in marula products targeting local markets. Detailed analysis of these different commercialisation pathways are provided in separate reports (Cribbins and Mander 2002, Shackleton 2002, du Plessis 2002) that readers are referred to for more details.

4.2.1 Economic aspects and impacts on household livelihoods and income (financial capital)

In terms of positive impacts, we have already highlighted how important any additional sources of cash income are to households (see above). No matter how many other sources of livelihood people have, the need for disposable cash is growing.

In Bushbuckridge, many of the people we spoke to mentioned how they were "suffering", and how the sales of marula products have helped to ease this if only for a few months of the year. One of the important features of a natural resource such as marula is that there are few barriers of entry to the trade: the fruit is freely available and accessible, and no start-up finance is required. Some of the marula beer traders said that their *indunas* and chiefs 'turned a blind eye' to the fact they were violating traditional taboos by selling beer/wine because they recognised the desperate situation many people were in and their need to earn income. Preventing a woman, especially a single mother, from selling marula fruit, beer/wine or kernels would be akin to sentencing her children to a future without education. It is also of note that beer/wine is seldom sold in the rural villages where this would be frowned upon and probably of

little economic benefit as everyone is making their own. Instead it is taken into the towns and sold to customers who cannot make their own or receive it from others, and who are generally strangers.

Similarly, in Namibia, the fact that many households are in need of extra cash income to improve their living conditions, is without a doubt the main reason for people's positive perspective on the commercialisation of marula. The households in the sample that sold marula products all claimed to use the money for basic needs like food, school fees, and hospital costs. Even the more traditional headmen interviewed acknowledged the fact that times are changing, and people are forced to sell products that were traditionally not supposed to be sold, although most of them make a clear distinction between the selling of marula beer/wine, which has important cultural values attached to it, and the sales of marula kernels, which is generally more accepted. Nevertheless, beer/wine is sold both at a local level (in contrast to Busbuckridge) and in the towns (see Section 3.2.2).

It is important note that in Busbuckridge, despite a mainly positive attitude to commercialisation, everyone who was selling to the commercial producers, MDC and Distell, felt that they were not receiving a fair price for the fruit. The price was said to be inadequate in terms of the time and effort that went into collecting it (the returns to labour calculated by Mander *et al.* 2002 support this). The comment "they are robbing us" came up frequently in the interviews. There was, however, less dissension around the price obtained for the kernels. Another frequently raised problem related to the poor reliability of the MDC and Distell trucks sent out to buy. They often did not arrive. Consequently both fruit (which quickly over ripens) and people's time was wasted and there was much discontent around this. In Namibia, the issue of whether people were satisfied with what they were earning was not raised in the report. The price households were receiving for kernels through Eudafano was lower than what MDC was offering but twice the market price.

Cash, however, is not the only contribution marula makes to the household livelihood base. We have seen above how domestic use far exceeds commercial use, and that in Makhatini there is virtually no trade in this resource at all. An important question is, therefore, whether increasing or new commercialisation will have a negative impact on people's livelihoods in the form of diminished subsistence use and nutritional intake of marula products.

In Namibia, the experience of the marula commercialisation process so far indicates that people are basically using the same amounts of marula products as they did before they started selling. They simply seem to put more time and effort into producing more. Up to now, the marula resource was abundant enough to cater for this increase in production. However, 75 % of respondents in the sample stated that there is now insufficient marula for everybody that wishes to collect, and one may legitimately ask if increased commercialisation will negatively influence subsistence use of marula in the future. In general though, the perception is that people will not sell the amount reserved for subsistence use, because of the multiple importance of marula in non-economic terms.

In contrast to Namibia, the overall message from the survey in Bushbuckridge was that there is adequate fruit for everyone and, indeed, a certain amount that is not used

at all. Thus, there appears to be opportunity to expand commercial use without threatening normal household supply. Certainly at this stage, only a small proportion (less than 20 %) of the total fruit collected was used for commercial purposes, and in most interviewee's opinions the most important use of marula was still for household beer/wine production. However, first attempts at a supply and demand model indicated that supply was not exhaustive and that this needed attention if commercialisation continued to grow (Shackleton *et al*. 2002). Indeed, the growing reports of theft of fruit from trees on private land in Bushbuckridge, and the fact that women wake up before dawn (sometimes as early as 3:00 am) to collect seems to suggest that there is a scarcity of readily accessible fruit.

Over one-third of households in Bushbuckridge reported that marula fruit had been removed from their 'private' trees without anyone first asking permission. Many people said that theft of fruit was unheard of a few years ago and some felt it could be linked to the commercialisation of fruit and beer/wine. The fact that the highest proportion of households reporting theft (65 %) was in Edinburgh (the village with the highest number of households involved in commercialisation) tends to support this, although a general decline in 'law and order' and respect for other people's property is a common phenomenon throughout South Africa and extends to NTFPs (Twine and Siphunga 2001). In addition to theft from private trees, during the group meetings women in Hokwe complained that 'outsiders' (mainly men in vehicles) were harvesting from the same areas in the commonage that they collected fruit, and that these 'outsiders' had chased them and taken their fruit. The issue of who has rights of access to marula in the communal lands surrounding villages is one that will probably increasingly surface as commercialisation grows. It is certainly an area that lacks clarity at the moment and the potential for conflict is high. The increasing level of theft is thus one of the primary areas of concern linked to commercialisation in Bushbuckridge at the moment. However, it is interesting to note that theft was also encountered in Makhatini where there is no commercial use, whilst, on the other hand, there were no reports of theft in Namibia where commercial use is probably highest.

The long-term prospects for expanding supply via supplementary planting appear positive based on the findings of this survey. Many households in Bushbuckridge were actively cultivating marulas or nurturing those that had self-seeded. These practises could be built on in an agroforestry intervention. In Namibia, a large number of respondents showed interest in learning how to grow marula particularly because the majority felt that there was inadequate supply.

4.2.2 Social and cultural impacts and implications (social capital)

While some feel that economic necessity overrides all other aspects of life, others fear that large-scale marula commercialisation will lead to a loss of social and cultural capital. The finding that, so far in Namibia and Bushbuckridge, commercialisation is not limiting domestic use of marula in any obvious way suggests that the influences on culture and tradition would be similarly negligible, as much of the cultural and social value arises from the brewing of beer/wine. However, some individuals amongst the leadership and within the communities with whom we worked were concerned that commercialisation of fruit and beer/wine would ultimately result in increased individualism and selfishness and the loss of traditional ways and

community cohesion. After all, an obvious effect of commercialisation is that marula changes from a gift to a commodity. Certainly the findings for Edinburgh (see Box 2) tend to support this.

There was also concern amongst headmen, particularly in Namibia, that the practice of people not bringing them beer/wine anymore would become more widespread if commercialisation developed further. A similar concern relates to the potential disappearance of the much-praised informal marula parties (see previous section), and the accompanying strengthening of social contacts. There is apprehension that these parties will not be held for free anymore, nor not with the same frequency. However, as far as South Africa is concerned, in our opinion church sanctions, which disapprove of the consumption of alcohol and ancestor worship, and modernisation are having as strong an influence on traditional use of marula as the trade in this species. Even though there is no commercialisation in Makhatini, many respondents indicated that, although they would be interested in selling fresh fruit or nuts, they were reluctant to sell beer/wine due to the social implications of this practice. A few respondents were concerned that selling of beer/wine would limit the amount available to the community. In Bushbuckridge, this concern is addressed somewhat by the fact the traders only sell beer/wine in the towns and not their own villages. Left over beer/wine after a day in the market is also shared amongst friends and neighbours, thus ensuring that traders meet their social obligations (Shackleton 2002).

Box 2: Negative commercialisation impacts in Edinburgh, Bushbuckridge

Although there appear to be no strongly negative consequences of commercialisation at this stage, closer analysis demonstrated some subtle dynamics around the marula resource in Edinburgh – the village with the highest number of households (62 %) involved in supplying the two commercial producers. We observed that Edinburgh had the lowest percentage of households giving fruit or nuts/kernels away (6 % compared to 20 - 30 % in the other villages), and lowest proportion of households allowing others to collect from 'their' trees (less than 20 % compared to about half in the other villages). In addition, fewer households than in other villages indicated that people from outside of the village could collect freely from the communal lands around Edinburgh. More said that permission from the *induna* was required - which suggests a degree of 'privatisation' of the resource at village level, or least a move from the marula resource being open access to it becoming the common property of the village. The highest number of households reported theft was also recorded in this village. On the other hand, it was interesting to note that more households in Edinburgh than the other villages mentioned that they practiced *xikuha* (presentation of beer/wine to the headman), and certainly as many households as in the other villages were sharing their marula beer/wine.

Source: Shackleton and Shackleton 2002

In Namibia, the potential negative effects of commercialisation, particularly of beer/wine and fruit, are possibly more complex than in South Africa because of the tenure arrangements and social setting within which beer/wine production takes place. Marula beer/wine production is an institution in itself. Neighbours help each other make beer/wine, and expect assistance in return. Women that do not own any trees, also help process marula beer/wine, even if they get a little or no beer/wine to take home. They do so, because it has a number of advantages:

- They enjoy the making of beer/wine as a social event. While processing the fruit they catch up with the latest news and gossip, make jokes, and sing their favourite marula songs.
- They build up their 'social bank account', strengthen their social bonds, and may expect support in any form in return.

- They have access to kernels and juice, as they can take home the nuts with the remaining flesh from fruits that they have processed. They will have kernels for subsistence use, and maybe even enough to sell.
- They will be invited to parties at their neighbours' house to enjoy the beer/wine they have made.

These social aspects of processing, combined with the tradition of giving away marula products to neighbours, friends, visitors, and relatives, are mechanisms that make marula as a resource accessible to all in a situation where almost all trees are privately owned. Apart from the tradition of 'giving away' becoming somewhat less, the commercialisation process so far has not had a huge negative impact on the social aspects of marula. It is however likely that large-scale commercialisation will change certain aspects of the marula social culture in the future. People may become more selfish, the owners of trees might not want to share 'their' economically important resource, one may have to pay for nuts, fruits, or processing services, and what happens to the 'social bank account' of those who are depending on that? It is difficult to predict in what ways changes will take place, but changes should certainly be expected, and equity issues are of particular concern. It is likely that the households that have no trees, and those with little or no cash income will lose out compared to the current situation. Some indications of what further commercialisation of fruit products might bring are illustrated in the story around the introduction of a fruit press in Box 3.

Box 3: Consequences of introducing a fruit press in Namibia

Some indications on future changes can be learnt from the experiences with a marula juice press that was introduced at the beginning of the 2002 season. The press was made on request of the Eudafano Women's Co-operative, who felt that the processing of fruits should be smoothened and increased. The press started to work in the ten villages where EWC associations are active. The associations decided to charge a small fee for the use of the pressing machine, for purposes of maintenance, and as a small income generating activity. Technically, the presses showed little problems, and all women were excited and impressed with the amount of juice processed in a short time. Upon questioning though, some concerns were raised. One complaint was that the press, because of its usage fee, was only accessible to the relatively wealthy households. Additionally, some wealthy households who owned a lot of trees were now pressing their marula with little involvement of their neighbours and friends, and especially those who owned no trees themselves felt left out on the action and on their fair share of the wine, juice, and kernels. Because of their neighbours complaints, the 'wealthy households' decided to try out the fruit press only on a limited number of trees, but it is not clear whether this neighbourliness will prevail when marula becomes 'big business'. Another possible problem of marula becoming 'big business' is related to the gender issue. The processing of marula has always been a women's thing, and money from sales of marula products has up to now been in the hands of women only. Still, we received a lot of male interest in the marula fruit press, and chances are that they would want to take over once the processing becomes more accessible to them, and the money greater.

Source: den Adel 2002

Compared to the sales of fruit and beer/wine, there was generally much less concern around the sales of the kernel resource. Increasing commercialisation of marula kernels is unlikely to have such a profound social and cultural impact on communities as the large-scale commercialisation of marula beer/wine. Although of social and cultural importance, the main difference is that kernels are generally not produced and consumed within social settings other than the household. There is also less concern amongst the traditional leadership about this resource. For example, the headman of Hokwe in Bushbuckridge was opposed to the sales of fruit and beer/wine for the reason mentioned above and discouraged members of his village from participating in

the MDC project, however, he did not prevent them from selling kernels (see Box 5 in Shackleton and Shackleton 2002). It was interesting to note that the fact that MDC in Bushbuckridge is buying kernels, has opened a potential new market for whole nuts. We found four households that had sold nuts to other households. In Bushbuckridge such a trend is probably of little consequence, but in Namibia it could prevent households without trees having access to nuts at all.

4.2.3 Interaction between externally driven commercialisation, local trade and the local economy

A distinction needs to be made between local, often self-initiated, commercialisation, and commercialisation on a larger-scale, whereby products are marketed outside the area of production often by an external agency. In both the Namibia and Bushbuckridge study sites both of these commercialisation pathways exist (see above). Often, it is the former that was in place first. In this context, an important question relates to how externally driven commercialisation initiatives influence, not just subsistence use (see above), but also local trade patterns and the local economy. The more formal type of commercialisation has the potential to bring considerable cash into the economy and, possibly, to benefit a larger number of people, but if the prices paid for products are higher, will people then still sell kernels to the old woman who is not able to crack the nuts herself anymore? And will there be winners and losers in the sense that some women, or men, will grasp the opportunity and make a good living out of being 'middlemen' between buyers and those women who are less knowledgeable or who cannot walk far anymore? In Namibia, the experience of marula commercialisation so far has not shown any negative effects with respect to these issues. It was found that a number of women that sell kernels to the Eudafano Women's Co-operative, for example, still sell kernels locally, despite the fact that the local price for kernels is about half of what they get through the cooperative, and the time spent on the local selling is much longer. Advantages of selling locally are the immediate availability of cash at any given time, and the social contacts that are made or kept while selling. Therefore, increased external commercialisation is not likely to have an impact on the local marketing of marula kernels. The issue of 'middlemen' might change, but for now making a profit out of other people's products was seen as bad practice by everyone we talked to, and men were, as of yet, not involved in the commercialisation of marula. Working through co-operatives, as is done with the large-scale purchase of kernels in Namibia, is a relatively good tool to prevent possible future 'bad practices'.

In Bushbuckridge, potential for competition and conflict between the two types of commercialisation lies in the influence of the commercial enterprises on local beer/wine traders. In contrast to the sale of kernels in Namibia, beer/wine traders in Bushbuckridge were actually making more money from selling beer/wine locally than they would by selling fruit to the commercial producers. In terms of total income earned, the sales of processed marula products, in particular beer/wine, in local markets offered better returns than selling the raw product to MDC or Distell. For example, an 80 kg bag of fruit fetched about R18, whilst the same bag of fruit converted into beer/wine fetched R62.50 (with few direct costs other than transport to the market). Thus, people were earning more from their own initiative in the informal sector than from the commercial producers with their sophisticated market chains and

products. The difference (based on averages) was in the range R300 to R800 per season, a substantial amount. Our impression was however that the local markets were becoming saturated (see Shackleton 2002) and, therefore, to ensure a wider spread of benefits it is essential to explore new opportunities, products and much wider markets - something that would be impossible for local people to achieve on their own. The findings suggest that the 'externally driven' commercialisation processes are in no way threatening local markets at this stage as they are not competing with them and the profits are also far lower, so there is no incentive to switch. Resource supply is also currently sufficient for both (see above). The benefits of value addition at household level and the stimulation of local markets are well demonstrated in the above discussion, and this is perhaps an area that needs to be developed further. Jam represents an ideal opportunity in this regard and is possibly something that MDC should consider in addition to trying to find export markets.

4.2.4 Commercialisation and the natural resource base

It could be argued that marula commercialisation is more likely to have a positive impact on the marula resource base, through increased cultivation and protection of trees, than a negative one. This is especially in light of the fact that the utilisation of the marula fruit resource, unlike many other NTFPs, is non-destructive and readily renewable.

In Namibia, where people were of the opinion that there were more than enough marula trees a couple of years ago, the perceptions of resource availability have now changed, and a majority of women interviewed expressed the wish to have more marula trees. The increased importance of marula, through the added economic value, and the perception of the limitations of the current resource base, will discourage people from cutting trees and give them an incentive to plant and protect marula. While doing our survey, many women asked where they could get information and support regarding the propagation of marula trees. They felt there was a lack of information on this matter as in the past it was unnecessary to be actively involved in the propagation of trees, and many people believed that marula could only grow naturally. It is unknown whether the added economic value on marula trees will also lead to an increased awareness or appreciation of the importance of trees or natural resources in general.

In Bushbuckridge, commercialisation seems to have increased people's awareness of the value of the marula resource not just in economic terms, but also in it being a unique resource that is appreciated for its many uses and special properties not just locally but also by the outside world. We felt a sense of people taking pride in the resource and a number of respondents mentioned how the increased value of marula would make people think twice about cutting a tree. People were also starting to think about the potential limitations of the resource base given that demand may increase as commercialisation grows, and what could be done about this. Commercialisation has certainly reinforced or raised new awareness of something people may not have given much thought to previously, i.e. the current role that marula plays in community life and the need to ensure that this is not compromised. Many respondents felt that they would pay more attention to nurturing young seedlings than previously, and that there needed to be stricter enforcement of the regulations that prohibited cutting of this

important species. The commercial ventures that are operating should ensure that they promote awareness of tree planting and protection.

4.2.5 Conclusions and way forward

There is no doubt that the cash income earned from the sales of marula products, however small, has been of great benefit to the households involved, and has provided another source of income to add to people's already diverse livelihood base. At community level, marula commercialisation has had the effect of diversifying the limited choices that people have to earn income. The disadvantages are the relatively small amounts earned and the extreme seasonality of the resource. Increasing the monetary value of a resource like marula also increases it value in the eyes of users, and it is likely that commercialisation will in the long-term have a positive influence on the resource base as people protect and propagate these trees. On the less positive side, the results indicate that while the impacts of commercialisation on rural livelihood systems, socio-cultural values and norms, subsistence use, and local markets were not dramatic or severe, there was evidence of some trends that could be regarded as negative (e.g. theft, decreased sharing). Whether these unfavourable trends will continue or become more widespread is a question that still needs to be answered. What the findings do illustrate, however, is that it is inevitable that commercialisation will influence and possibly change the way in which a resource is used and perceived, and trade-offs are inevitable in the real world. What is important is whether such changes have particularly negative consequences for certain sectors of the community (affect equity) or for the sustainability of the resource base. The gains from, for example cash sales, should make up for or out weigh any losses that may occur elsewhere and should be sustainable in the long term. Given the necessity to earn cash income, it is only realistic to support these opportunities (as local leaders have accepted) as even communities themselves are turning traditional products into commodities (Campbell *et al.* 2001, this study). The challenge is to find a balance between providing such options and maintaining traditional systems of resource use, local culture and social cohesion. This sentiment is well captured in the wise words of Mr Joseph Hailwa, Director of Forestry in Namibia presented in Box 4.

Box 4: Some wise words

"People need money to pay for their basic needs, and commercialisation of forest products will even make people plant and protect more trees, which is good. But practitioners working with forest product commercialisation should be aware and acknowledge what may be lost. The social and cultural values around marula for example, show a richness of our society which cannot be translated into dollars. One cannot put their values against each other and say what is more. I'm not saying that commercialisation is bad, I just want people to be aware, and look around before taking any action." (Mr Joseph Hailwa, the Director of Forestry in Namibia).

Source: den Adel 2002

In terms of what all this means for new or continued commercialisation, possible ways forward for the different study sites are discussed and some specific thoughts, ideas and recommendations presented. Note, that detailed recommendations and actions can only really be made when all the information and data collected for this project are collated and integrated including the markets chain analyses, resource surveys and policy analyses.

Namibia

The commercialisation of marula kernels could and should be intensified. The commercialisation process, currently done through the Eudafano Women's Cooperative with logistical support from CRIAA SA-DC, has been a positive experience for all parties involved. The trade in kernels has not shown any negative effects on social or cultural capital, nor on the local trade, nutritional intake, or the resource base. Furthermore, we found many women eager to participate.

Marula juice/wine on the other hand should be left to develop by itself for the time being. Local commercialisation of marula beer/wine is already taking place, and there is no way the process may be stopped or slowed down. But instead of creating opportunities for large-scale commercialisation of the product, it would be better to be circumspect and rather wait and see how it goes, see how the culture adapts to the changes and give it some time. It may well be that people will only sell what they can culturally and socially 'afford', and that the disruption of social and cultural structures will therefore be limited, but the best chance we have to achieve that is by letting the process develop in its own pace.

Other opportunities for the commercialisation of marula products may be identified. The production of marula jam for example, is as of yet an unknown activity in North-central Namibia.

Bushbuckridge

As far as current external commercialisation is concerned, our impression was that the relationships between the commercial buyers and the community suppliers were not particularly congenial. Most of our interviewees supplying to Distell had no idea who the buyers were and where they were coming from. It was also mentioned that MDC staff were often unavailable, did not make meetings or had no money to buy kernels when suppliers arrived at the centre in Thulamahashe to sell. Communication between these different actors needs to improve. Furthermore, the low proportion of costs that the purchase of fruit represents in the Distell product chain suggests that they could pay more to primary producers. On the other hand, MDC currently lacks the profit or economies of scale to offer a much better price for the raw product. As it is, the present payments are subsidised by the donor.

MDC is looking mainly to external markets for the marula products they are developing. However, the potential of local markets for products that can be value added at household level need to be explored. Selling raw fruit and nuts is never going to provide much income for households, and already local beer/wine traders are earning more by selling beer/wine in the local towns. Since a large number of households in Bushbuckridge are making jam this may be a product to start exploring.

As discussed for Namibia, the local beer/wine trade because, of the sensitive social and cultural nature of this product, should not be expanded but rather effort needs to be made to improve current conditions for women traders. It is suggested that this could be something MDC facilitates. Detailed recommendations are provided in Shackleton (2002). In summary some of the short term suggestions include: a) advocacy work with municipalities, district councils, police and traders associations to find ways in which beer/wine traders can be accommodated in the markets for the few

months of the year they are selling instead of being harassed; b) explore the potential of *nhlowa* (strong, long lasting alcohol) as an additional product with a much more extended season (i.e. could be sold at Easter) or consider ways in which pulp could be stored (e.g. refrigerated by MDA) for use later in the season; c) facilitate the organisation of traders so that they can negotiate better prices and expand the beer/wine trade, for example through hiring transport, to larger towns such as Nelspruit, keep their trading area clean and tidy, and work with the police and security to seek ways to deal with disruptive customers.; d) provide traders with information on basic hygiene and health standards and practices that are important for a product like marula beer/wine; e) explore new market options – e.g. selling to bars and shabeens in the local area and perhaps even further afield; f) ensure that all beer/wine traders know that MDA purchases kernels (at present about half are selling kernels), and that this can be an additional source of income from the fruit collected for beer/wine production, and finally g) provide business skills and information on other products to increase options for out of season employment for traders.

Makhatini

The fact that there is almost no sale and trade in marulas or marula products seems to be directly related to the findings that there is adequate resource for those who wish to harvest in the area, thus no local demand, and also no external outlet for marulas in any form other than a small amount of bark for 'muti' (recorded in the policy survey interviews). Many respondents stated that they would like to sell, particularly fresh fruit or nuts, but were reluctant sell beer/wine due to the cultural implications of this. It appears, that in this case, without the intervention of an external agency, marula commercialisation is unlikely to grow substantially, although two people were observed to have recently started selling locally. On the other hand, if the Bushbuckridge beer/wine market is anything to go by (Shackleton 2002), it may not be long before others emulate the initiative taken by these two women.

Relevant stakeholders in all sites should be considering environmental education processes that highlight the value of marula trees and encourage their planting and the development of community-based management systems that protect the trees from fuelwood harvesting. Agroforestry interventions to select and breed high yielding genotypes at community level and to increase the number of marula trees in private space

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