

DRAFT

**SPECIAL STUDY ON
HOODIA PRODUCTION AND MARKETING
FOR POVERTY REDUCTION**

for the

**NATIONAL PLANNING COMMISSION
RURAL POVERTY REDUCTION PROGRAMME (RPRP)
9 ACP NAM 012**

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List of Abbreviations

AGM – Annual General Meeting
CITES – Convention on International Trade in Endangered Species of Wild
Fauna and Flora
CSIR – Council for Scientific and Industrial Research
DAFWA – Department of Agriculture and Food Western Australia
EU – European Union
FDA – Food and Drug Authority
HACCP – Hazard Analysis and Critical Control Point
HCPRP – Hoodia Commercialization and Poverty Reduction Project
HOGAN – Hoodia Grower’s Association of Namibia
IPTT – Indigenous Plants Technical Team
IVS – Invitro Soil
Kg – kilogram
MET – Ministry of Environment and Tourism
NNFU – Namibia National Farmers Union
RPRP – Reducing Poverty
RSA – Republic of South Africa
SME’s – Small and Medium Enterprises
SPSS – Statistical Program for Social Sciences
WIMSA – Working Group of Indigenous Minorities in Southern Africa
XL – extra large (XL)

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1.1 Introduction

The demand and supply of the current Hoodia market is in a precarious position. Sufficient supplies exist for *hoodia gordonii* plants and its derived products from Southern Africa, especially Namibia and the Republic of South Africa (RSA). The demand for Hoodia gordonii has ceased to a near halt. Since Unilever has terminated its contract with the relevant authorities in South Africa, the worldwide demand for hoodia derived products has decreased drastically. One of the main reasons for this stalemate is the lack of any clinical tests and proof(s) that the P57, found within hoodia plants, is beneficial to human kind in suppressing hunger or any other diet related activities. This situation developed since early 2009 concurrent with the world-wide economic downturn; however, it is not anticipated that demand will ever increase again. What is needed urgently is a proof that hoodia and its derived products is/can be beneficial to human kind as well as safe for consumption with some specified, recommended amounts. There are rumours and public experience that it is beneficial but no evidence on the public safety and efficacy in using Hoodia derived products for this. There is also further information available derived from traditional knowledge that hoodia can be beneficial to other health related facts such as diabetes, blood pressure and gout, but again without any clinical tests.

The EU funded an N\$ 9.4 million project aimed at reducing poverty in the southern arid regions of Namibia, being the Hardap and Karas regions. The hoodia plant is a drought tolerant plant and in commercial production has many benefits. If a reliable market can be created through sufficient trust in the safety and efficacy of hoodia derived products, it could contribute significantly to reduce poverty in the southern arid regions of Namibia.

1.2 Objective of the assignment

The objective of this assignment is to assess the production and marketing of hoodia in order to design support strategies and services for the Government and interested development partners to make hoodia an alternative source of income for the poor in Hardap and Karas regions. Specifically, the following will be assessed:

- i. the implementation of the hoodia project and its impact on the communal growers based on the existing markets.
- ii. the prospects of future support for hoodia production and commercialization,
- iii. and identify relevant strategies for realizing the prospects in ii, and prepare a cabinet report on further support to hoodia production.

The tasks of this consultancy were to investigate the current hoodia production by small scale producers through the RPRP project, and thereafter investigating the wider arena of the possible potential of hoodia.

2 Project investigation

The “Hoodia Commercialization and Poverty Reduction Project (HCPRP)”, is being implemented in Hardap and Karas regions by the Namibia National Farmers Union (NNFU). The project investigation was not termed as a mid-term review nor as final review, but rather as a review with identifying any gross project management errors as well as any possible advice that could be implemented for project close.

2.1 Field visits

A one week field survey was conducted by the consultant in Mid-January 2010 with the assistance of an additional survey person. The field project co-coordinator in the Karas Region, Mr Aaron Stephanus, assisted for three days in the Karas Region. Sixty-five beneficiaries were interviewed in Kosis, Bethanie, Vaalgras, Berseba, Kainachas and Tses areas. The remaining two days 40 beneficiaries in the Hardap region were interviewed in and around Hoachanas, Stampriet, Kalkrand, Duineveld and Tsumis Park with the assistance of the project co-coordinator for the Hardap region, Mr Christian Motinga. Mr Herero, Deputy Director of Planning of the Hardap Regional Council assisted one day with the survey in Hardap Region.

From a total of 300 beneficiaries, 105 were interviewed. With a 10% degree of error margin, the required sample survey of a total sample size of 300 is 76 respondents. This survey thus did reach a satisfactory sample size. The south eastern areas of Hardap Region were not sampled as the rains made many rural roads impassable.

Each beneficiary received fencing material to build a suitable enclosure to plant hoodia on approximately 30 square metres (planned for 5 by 6 metres). Then all 150 beneficiaries in the Karas Region received a shade tunnel suitable as a nursery of approximately 2 metres by 5 meters. In the Hardap Region a small change was implemented by giving only the village farmers a shade tunnel. The 75 communal beneficiaries in the Hardap Region did not receive a tunnel. With the first batch of plantings all village farmers received in March 2008, fifteen *hoodia gordonnii* plants and all communal farmers received 40 plants of same species. These plants were harvested in April 2009 by uprooting them and leaving them to dry naturally.

For the second batch of planting (after the first plantings were harvested), all village farmers received 500 seeds of hoodia and communal farmers 4000 seeds. The 75 beneficiaries in Hardap Region, who did not receive a tunnel, received 500 seedlings (1 year old plants) as a type of compensation.

Table 1 below depicts some general statistics from the survey. This table does not include all questions but only those that indicate some general information when using averages. Answers which had the option of multiple responses, only the most important answers were indicated. The questionnaire used in the survey is attached in Appendix I.

Table 1: A general profile of the survey with selected questions from survey. Answers in bold (totals and averages)

| | | |
|--|--|--|
| Region Karas 65 Hardap 40 | Village Farmer – 75% Communal Farmer – 25% | Male – 58 Female – 47 |
| Age – 53 years 18% - pensioners, 69% - above 40 years 13% - younger than 40 yrs | Latest school qualification (Grade)? No formal schooling – 17% Primary Grade – 20% Secondary Grade – 62% Tertiary – 1% | Size in m ² of Hoodia cultivation (l x w of plot) Av 82 m² < 30m²- 6% 30 – 100m²- 47% 100 – 200m²- 43% > 200m² – 4% |

| | | |
|---|--|--|
| <p>How many livestock do you own? (average number)</p> <p>Sheep 12 51% zero, max 197</p> <p>Goats 1.3 88% zero, max 25</p> <p>Cattle 0.5 91% zero; max 20</p> | <p>Do/did you have any employment (permanent or temporary) in 2009?</p> <p><i>None</i> – 77%</p> <p><i>Permanent</i> -7%</p> <p><i>Temporary</i> -16%</p> | <p>Physically challenged?</p> <p><i>Yes</i> 11%</p> <p><i>No</i> 89%</p> |
| <p>Are you the head of this household?</p> <p><i>Yourself</i> – (Yes) 70%</p> <p><i>Your spouse</i> –(No) 30%</p> | <p>Member of HOGGRAN?</p> <p><i>Yes</i> 71%</p> <p><i>No</i> 29%</p> | <p>How many years are you a HOGGRAN member?</p> <p>15% = 1year</p> <p>55% = 2 years</p> <p>2% - 3 years</p> |
| <p>Do you receive any information from HOGGRAN?</p> <p><i>Yes</i> – 11%</p> <p><i>No</i> – 75%</p> <p><i>Don't know</i>- 14%</p> | <p>Is it beneficial to be a HOGGRAN member?</p> <p><i>Yes</i> – 22%</p> <p><i>No</i> – 61%</p> <p><i>Don't know</i>- 17%</p> | <p>What training did you receive to grow Hoodia?</p> <p>1. <i>Information days</i> – 94%</p> <p>2. <i>Workshop</i>- 96%</p> <p>3. <i>Grower's Manual</i> – 96%</p> |
| <p>How many Hoodia plants did you <i>receive</i> with the first distribution? (Note there is also a 2nd batch) #</p> <p><i>Village farmers</i> = 15 plants (99%)</p> <p><i>Communal farmers</i> = 40 plants (99%)</p> | <p>Did you have any noticeable losses in production in Hoodia plants? How many plants died?</p> <p>Average two plants died per farmer but 44 beneficiaries lost no plants and two beneficiaries lost 95% of their plants.</p> | <p>What was the <i>reason</i> for this <i>loss</i> of the 1st batch?</p> <p>Natural – 66,6%</p> <p>Management – 33,3%</p> |
| <p>What was the <i>reason</i> for this <i>loss</i> of the 2nd batch?</p> <p>Natural – 66%</p> <p>Management – 33,3%</p> <p>(Germination rate was very low)</p> | <p>Do you have sufficient <i>knowledge</i> to cultivate Hoodia?</p> <p><i>Yes</i> – 82%</p> <p><i>No</i> – 18%</p> | <p>How many <i>visits by project management</i> staff were done in 2009?</p> <p>0 & 1 visits – 6%</p> <p>2-4 visits – 73%</p> <p>5-7 visits – 14%</p> <p>7 – 8 visits – 7%</p> |
| <p>How many <i>visits by government staff</i> (MET or extension officers) were done in the last year (2009)?</p> <p>No visit - 51%</p> <p>1-2 visits – 47%</p> <p>3 visits - 2%</p> | <p>If good market conditions prevail, would you <i>plant again</i> Hoodia on your own account?</p> <p>None - 0</p> <p>Less – 1%</p> <p>Same – 1%</p> <p>More (than before) – 98%</p> | <p>Will you be able to <i>purchase your own inputs</i> for Hoodia production?</p> <p><i>Yes</i> – 59%</p> <p><i>No</i> – 18%</p> |

| | | |
|---|---|--|
| Did you <i>receive a starter pack</i> <i>Yes – 100%</i> (2% not complete kit) | Do you <i>still own the complete</i> starter pack? <i>Yes – 99%</i> <i>No – 1%</i> | Did you market any Hoodia on your own? <i>Yes – 4%</i> <i>No – 96%</i> <i>If yes, where to? One</i> passer-by, 3 friends |
| How much N\$ did you receive for your Hoodia? 96% did not sell any Hoodia outside the project. | What are your expectations of the current <i>Hoodia price</i> ? 97% could not give any price for any type of Hoodia When asked for estimates, prices ranged between N\$ 60,000 for their harvest to N\$ 5 for a seedling) | What were your own input costs during the project life? <i>Infrastructure and</i> <i>tools 0</i> <i>Labour N\$ 100 for 1</i> beneficiary <i>Own labour hours</i> from 1 to 80 hours / week. Av 6 hrs/week. |
| Would you propagate your <i>own seeds (83%)</i> of Hoodia or <i>purchase seeds (15%)</i> to plant Hoodia? 3% indicated to rather purchase small plants | Is the production of Hoodia financially more favourable than your other activities? <i>Yes, 46%</i> <i>No, 36%</i> <i>Do not know 15%</i> | What type of problems did you encounter most during the project? <i>Natural (drought,</i> <i>floods)72%</i> <i>Financial (purchasing</i> <i>of inputs)13%</i> <i>Technical</i> <i>(knowledge)1%</i> <i>Personal 8%</i> |
| What other economic alternatives are there in comparison to Hoodia? Garden, horticulture 34% Livestock – 20% Needlework – 31% | Why do you live in poverty? Give three suggestions ranked according to importance 1)Unemployment 2)Education 3)Lack of government support 4) Drug abuse 5) Lethargic 6) Community is envious 7) Political environment | Are there still <i>other</i> poor people living in your vicinity that did not join the Hoodia Project? <i>Yes – 63%</i> <i>No – 37%</i> |
| <i>Why did these people not join?</i> Did not apply – 14% Rejected – 4% Hesitant – 73% | <i>Why were you chosen to join</i> this project? Applied – 89% Chance taker – 11% (Entrepreneurs) | Member of any other association in agriculture? <i>Yes – 32%</i> <i>No – 68%</i> |
| Household data Number of adults – average 3 11yrs to 20yrs – average 2 0-10 yrs. – average 2 | | |

The survey data was further analysed using Statistical Program for Social Sciences (SPSS), version 17 as a software programme with the assistance from Mr Piet Stoman of Survey Warehouse (Pty) Ltd. Further to initial frequency tables, it was attempted to use some of the main and multiple responses to investigate, whether there are any independent and dependant variables. Cross tabulations were done using as an independent variable; region (Hardap vs. Karas), gender (male vs. female), plot size (large versus small), age (young vs. old), type of farmer (village vs. communal), reason for poverty (according to answer in questionnaire), household size, schooling, employment, income earned from other sources and livestock as an asset. Further statistical tests were also run. Significance tests did not reveal on SPSS any significant variables that are independent on another set of dependant variables.

Investigating in detail the harvests from each surveyed beneficiary was unsuccessful, as only 64% of the beneficiaries could state the exact kilograms of their harvest. Both project co-ordinators confirmed that the harvest from each beneficiary was weighed at collection and the weight confirmed to them in writing. Investigating the second, current batch of seeds planted, the data was distorted. Most beneficiaries again did not plant all their seeds yet. Some beneficiaries had seed stocks ranging from 10% to 90%. The germination rate of the seed was notoriously low in some specific areas and it could have been assumed that there are some issues with the quality of the seed given. However, there were also some beneficiaries who collected their own seeds from nature and from their previous own plants and planted of these seeds. Thus it was difficult to investigate any production data in more detail. Production data from all beneficiaries supplied by project management was used to analyse some distinct facts on the beneficiaries' first harvest.

2.2 *Cross tabulation results*

In the geographic profiles of the beneficiaries, it was noted that Hardap Region had older people, more males and generally all beneficiaries had less schooling. Karas Region had bigger cultivated plots although the farmers were mainly village farmers (in comparison to communal farmers). They experienced fewer losses through plant mortality although percentage wise double the amount of beneficiaries stated that they have insufficient knowledge. In their financial background the Karas Region beneficiaries encounter more financial problems with purchasing inputs and especially water and thus hoodia production is not regarded as a good economic alternative to other forms of economic activities. Gardening as an economic alternative is regarded at nearly half to what Hardap Region beneficiaries stated. Drug abuse is regarded by the Karas Region beneficiaries as a bigger reason to poverty than the Hardap region, which stated that education is their third reason for poverty.

When classifying the data according to the age of the beneficiaries, no production data indicated any significant results or differences. It can be noted that 93% of the younger generation of beneficiaries (below the age of 40 years), have some secondary schooling as well as 93% are village farmers. The pensioners have less schooling experience with 22% having no formal schooling. Two thirds of the pensioners are village farmers.

The gender related cross tabulation indicated that the younger generation of beneficiaries is dominated by females, while the middle aged group (above 40 years of age) and pensioners are male dominated. Their level of schooling indicates no difference. The

female beneficiaries dominate on the biggest and smallest plots but have much less livestock, with one exception of the biggest goat herd belonging to a female beneficiary. Males tend to take up less employment, while the females take on temporary work. The within country migration of males to the southern regions might indicate that males have stiffer competition for employment. Thirty three percent of the female beneficiaries receive an income from some sort of employment, while only 18% of their male counterparts receive an income from some sort of employment. Twenty percent of the males receive again an income from the sale of livestock, while only 10% of the females report any income from livestock sales. All males will plant again hoodia, if market conditions are favourable, while 96% of females would plant again, although the females have higher perceptions of expected market prices. Although both genders mention that unemployment is the main reason for living in poverty, females rate drug abuse higher as a second reason for poverty, than the males, who rate it lower. Male beneficiaries' households tend to have more children than female beneficiaries' households.

With a further cross tabulation, the current hoodia plots of the beneficiaries were classified as:

Small – less than the 30m² supplied

Medium – between 31m² and 100m²

Large – between 101m² and 199m²

XLarge – over 200m²

Table 3 in Appendix II then compares the smallest and largest (XLarge) plot sizes and their characteristics. The Karas Region has the most of the smallest plots as well as most of the largest plots, while the Hardap Region plots are most of the sizes medium and large. Female beneficiaries represent two thirds of the smallest plots and half of the extra large (XL) plots. The young generation of below 40 years of age, own none of the XL plots, while the above 40 years old and pensioners represent each half of the XL plots. Two thirds of the smallest plots beneficiaries have some degree of secondary schooling while the XL plots indicate that there are beneficiaries with no formal schooling, with some primary schooling as well as completed secondary schooling. This clearly indicates that the level of schooling is not too important in the cultivation of hoodia. The commitment to cultivate hoodia does indicate one of the main factors. Persons that are permanent employed also do not own any of the smallest plot nor the XL plots but are realistically situated in the two middle classes. This also indicates that it is possible to be employed as well as still tending to a hoodia garden at home of reasonable size. Two beneficiaries who have temporary work own of the smallest plots, while none of the XL plots have any beneficiaries with employment. The beneficiaries who are physically challenged own none of the smallest plots, but only medium, large and one XL plots, indicating that a hoodia garden can be cultivated by the physically challenged. The bigger the plots the more intense cultivation becomes and the more prone the beneficiaries are to correct management. This can be noticed from the results of problems encountered. Contrary to this is that financial problems do not influence the XL plots, where the cost of watering would be an issue, as all XL plots are also unemployed persons. The small plots have the highest market price expectations and thus plant accordingly less to achieve some livelihood results, while the XL plot beneficiaries all have the lowest market price expectations. Also contrary to the management problems, the XL plot beneficiaries still have less negative sentiment about the future of hoodia as the small plot owners, but this also indicates that the small plot owners with two thirds being negative do not want to cultivate hoodia intensively on a larger scale. The suggestions for economic alternatives to hoodia are the same for the small and XL plots. Both groups did

not mention needlework at all as an economic alternative but both groups see gardening and livestock as alternatives. The XL plot beneficiaries obviously indicate a higher degree of gardening as an alternative than the small plot beneficiaries. Needlework was suggested only by the two plot sizes in the middle, being the medium and large plots. The main reasons for poverty do indicate a different situation as previously described. The XL plot owners are of the opinion that smaller plot owners are somewhat lethargic in planting bigger amounts of hoodia and that drug abuse is the second reason, while unemployment only ranks third. The small plot beneficiaries again suggest that communities are not able to work effectively together and are mostly jealous of each other's success and thus assistance from other sources is always very limited. The government's lack of support and then drug abuse are the two other main reasons of poverty. Beneficiaries with XL plots are also of the opinion that all those who did not join this project are hesitant about joining new development projects, while the small plot beneficiaries only two thirds are of the same opinion.

Table 4 in Appendix II classifies the beneficiaries into their categories of village farmers and communal farmers. Communal farmers are usually associated with rural settings, owners of more livestock, difficult to reach the beneficiaries for training and visits, less schooling, having more knowledge about natural cultivation. However these notions did not emanate from the results. The notion of communal farmers being more unemployed and of the older generation is correct as only one communal farmer and beneficiary is below 40 years of age. The level of schooling between village and communal farmers is the same. While a communal beneficiary owns the largest herd of sheep, the next 16 owners of highest sheep numbers are all village farmers. The same can be noticed with goats and cattle and this point indicates that village people do own more livestock than communal farmers. Many of the village farmers were also not situated directly in urban settlements, but on the outskirts of the settlements within two to five kilometres from the centre of the settlement. The income derived from livestock sales is also accordingly higher with village farmers than with communal farmers. Communal farmers mentioned that they received more information from the Hoodia Grower's Association of Namibia (HOGGAN), than the village farmers. Village farmers also attended less the information days, workshops and received less the Hoodia Grower's manual than the communal farmers. The plant mortality from the first batch of plants was higher in the communal areas than the village areas. Usually it would have been assumed the opposite to last mentioned. More village farmers mentioned that they have insufficient knowledge about hoodia than communal farmers. The communal farmers indicated a very high degree of natural problems with growing hoodia, while financial and personal problems were both below 10%. The village farmers indicated to a lesser degree that natural problems occurred most, while financial problems did limit some to water their gardens optimally. Personal problems were also of much bigger concern to village farmers. The economic alternatives to hoodia are mentioned by the village farmers as gardening and livestock of equal importance and livestock as a third alternative. Gardening as an alternative is ranked much higher by communal farmers and strangely livestock is ranked much lower than by village farmers. Needlework is mentioned by both groups relatively the same amount. Village farmers are of the opinion that unemployment is the main and second reason for poverty while drug abuse contributes as a third reason. Communal farmers rank unemployment as the main reason, lack of government support as the second reason and education as the third reason. Communal farmers are more involved in being also members of other associations than village farmers.

During the survey, the question was asked specifically to the beneficiary, why he was chosen to join the project. The minority mentioned that they applied formally and the majority mentioned that they have a sense of entrepreneurship, chance seekers, and adopters. Numerous times the Afrikaans words were heard: 'I want to progress ('Ek wil weer opstaan, ek wil bo uitkom)'. This answer was classified according to those that applied formally while hearing of the opportunity and being chosen but being more the laggard type of beneficiaries, while the entrepreneurs were classified as early adopters. The entrepreneurs also applied according to the same procedures of the project, but just rated pertinently their livelihood trajectory. The cross tabulations between these two groups indicated some important facts. The Karas Region has 10% more entrepreneurs than the Hardap Region. The beneficiaries that applied own 25% of the small plots while only 4% of the entrepreneurs own small plots. Twenty beneficiaries of the entrepreneurs have part or full time work while only three beneficiaries who applied have some kind of employment. The entrepreneurs have much less insufficient knowledge regarding the cultivation of hoodia. All twelve physically challenged consider themselves as entrepreneurs. Entrepreneurs encountered financial problems while none of the other encountered financial problems. The entrepreneurs cite the two main reasons of poverty as being unemployment and thereafter the third reason being education, while those that applied as beneficiaries mentioned unemployment as the main reason and drug abuse as the second and third main reason of poverty. Entrepreneurs' household sizes are larger.

Especially in the Karas Region it was mentioned that some beneficiaries and most non-beneficiaries were very hesitant to join again a project. Previously there were numerous development projects since independence implemented in the Karas Region. Especially a preceding project regarding ostrich farming made the community wary of joining new development projects, as this preceding project was a failure. As this was a pilot study, it was possible to recruit beneficiaries. If the hoodia project would have been a development project implemented on a bigger scale, the applicants would not have been too numerous.

In further cross-tabulations the total household size was investigated. Total household size was calculated by adding the three classifications in the survey of adults, persons between 10 and 20 years and children below the age of 10 years. The Karas Region total household size is remarkably larger than in Hardap Region. Of the Karas Region's beneficiaries households there are 15% households with more than 13 persons, while only 5% of Hardap household have more than 13 persons. Households where the beneficiary has some secondary schooling, have larger households than of beneficiaries who have no formal schooling, some primary schooling or primary schooling completed. Village farmer's households are larger than communal farmers. Full time and part time employed beneficiaries' total household size are smaller than those of unemployed persons.

2.3 Further points on the project

The selection process of the beneficiaries was done conducive to the targets of the selection criteria. One beneficiary also mentioned openly that he was chosen as he was HIV Aids positive. A few beneficiaries in the urban villages did seek successful employment as security guards at the clinics, hospitals and other government buildings, as well as numerous beneficiaries were cleaners at schools and other government institutions. Although beneficiaries were unemployed during the selection process, they

were successful in securing employment later. At all households where the original beneficiary did start employment, the task of tending to the hoodia was ceded to a close relative. However, most of these gardens did not receive the complete necessary attention and watering was done at greater intervals.

The Hoodia Grower's Manual for the beneficiaries was produced with an excellent visual display and 96% of respondents received the manual. One point though deduced from the questionnaire, was that the amount of watering hoodia requires, was not indicated sufficiently. Although this varies a lot from seedlings to big plants, many respondents did not know whether their plants died of too much or too little water. Most probably a container depicting the amount of water for seeds, small, medium, large plants during winter and summer would have assisted some beneficiaries. Other details of when to omit watering after rains was known, but not for how long after the rains ceased should watering again commence. Beneficiaries seldom could estimate the rain in millimetres during the field visit. Apart from a visual water schedule, the grower's manual was valued very much by the beneficiaries.

To include the unemployed members of the community in agricultural projects is a main aim of this project, it was noted strongly that the unemployed in towns and villages cannot afford to water their plants with purchased water. Most unemployed urban beneficiaries did not water their hoodia garden regularly and the plants survived with stunted growth. Numerous household water points were disconnected by the village authorities due to high outstanding debts. These beneficiaries receive water from family or friends but could not walk the long distances between a tap with water and their gardens. In the Karas Region beneficiaries in rural small settlements mentioned that they paid a flat rate N\$ 10 for their monthly water. Livestock farmers had to pay N\$ 12 per month. In urban settlements this amount was usually above N\$ 50 per month for household water (Berseba, Gibeon). One beneficiary in Kosis (village farmer) with a successful garden knew exactly that his hoodia costs him N\$ 2 per watering, as he watched his water meter meticulously before and after watering the hoodia.

The village farmer's soil was noted to be of poor quality in many settlements. Kosis, Bethanie, Berseba, Gibeon and Tses are all located on rocky outcrops with a very thin sandy soil and calcrete underneath. Hoachanas, although not situated on a rocky outcrop also has a very thin layer of sandy soil. Some beneficiaries in these urban settlements made great effort with wheelbarrows or with vehicles to bring sufficient sandy soil from a nearby river. Mostly pensioners were able to purchase such transport and assistance. Some family labour was also utilized to cart in sand from a short distance. Village farmers were also more limited to choose a suitable piece of land and had to consider neighbours. Communal farmers could avoid areas not suitable for optimal production much easier. In Karas Region three beneficiaries were encountered that moved their complete household over a distance of a few hundred metres and transplanted also their complete plantings. This affected obviously the optimal production to a certain degree. These households usually moved due to a very bad water supply including being the last consumer on a very demanding pipeline. Windmills are the primary water source for many communal farmers. In times of no wind there is insufficient water for gardening. Personal problems with direct neighbours and sharing water points also resulted in two beneficiaries moving their household to another area.

Two tunnels were dismantled during the survey and the remaining tunnels were all in good, proper and sound condition, without any significant damage to the netting or structure.

There were 300 beneficiaries selected for the project, 150 each in Hardap and Karas Regions. Currently there are 147 beneficiaries in Hardap region as three beneficiaries moved away from their households. This is a very small rate taken into consideration that many (77% in survey) are unemployed. The Regional Council could not find suitable replacements and this migration happened towards the end of the project. In the Karas Region there are still 149 beneficiaries. One lady passed away and the daughter took over just prior to harvesting. This new beneficiary missed the harvesting period and was later advised to leave the current Hoodia in the soil and sell at a later stage. Commercially it is anticipated that a 4 year old hoodia plant can be harvested with a wet weight of 5 kg. The dried weight amounts to 10% of the wet weight and thus one plant produces half a kilogram of dried weight. All following weights mentioned are dry weights.

The total first harvest of the 300 beneficiaries was 1,504kg dry weight Hoodia. Karas Region beneficiaries received 3970 plants and produced 808kg, while Hardap Region beneficiaries received 3980 plants and produced 14% less hoodia at 696 kg dry weight.

The Karas Region harvest of hoodia plants contained the following information. Six of the top ten producers of the Karas region reside in the Vaalgras area, while three reside in Bethanie area. The highest harvest was 13.5 kg in Vaalgras and descending to 8kg. Four of the low ten reside in the Bethanie area, two from Satco and Tses and one from Vaalgras and Koës respectively. The lowest harvest was 2kg and ranged to 4.1kg.

The Hardap regions harvest of hoodia plants was scattered between the different clusters more than the Karas Region. Three of the top ten producers of the Hardap region reside in the Hoachanas area, while two reside in Duineveld area as well as one beneficiary each from Tsumis, Omamas, Amper-Bo and Khai Khauni. The highest harvest was at Tsumis with 10.4kg and descended to 7kg. Three of the low ten reside in the Bondelswarts area, while one beneficiary each from Maltahöhe, Nabaseb, Stampriet, Duineveld, Tsumis, Aranos and Rietoog. The lowest harvest was 1.8kg and ranged to 3.8kg.

These figures include the village farmers who received 15 plants as well as the communal farmers who received 40 plants, giving an indication that the range in harvest weight varies extremely. The top ten in both regions were 15 males and 5 females, while the low ten beneficiaries were in both regions 10 males and 10 females. The top ten farmers in Karas and Hardap all received 40 plants; however places 11 and 12 from the Hardap region were one male and one female village farmers who only received 15 plants, indicating an extremely high yield. Of the lowest 10 producers of Hardap Region, six producers received 40 plants and 4 producers received 15 plants, indicating that the communal farmers with 40 plants did not harvest a good yield. For the Karas Region the same applies with 5 farmer in the low ten who received 40 plants and 5 farmers only received 15 plants (and producing the same yield). This indicates that the yield between all types of beneficiaries varied greatly.

In Karas Region the Satco area produced the smallest yield with 4.75kg on average from a start of 40 plants. Within these 10 producers the harvest also varies from 3.3 to nearly double at 6.5kg and the Vaalgras area the best harvest with average 8.81kg (ranging between 7.2 to 13.5kg).

Developing further linkages should have been established throughout the project life. Hogran members were advised to keep their current plantations and to minimize or halt any new plantings. This message has not yet been transferred to interviewed beneficiaries, although with an understanding reason that beneficiaries were not yet compensated for their first harvest yet. It is recommended that the minimizing strategy of current plantations should also be informed to the project beneficiaries. Project beneficiaries should also be informed where to receive information in the future, where to market or plant their hoodia, if the need or wish arises. It is somewhat difficult to advice on a clear-cut strategy. The radio is used currently by the project coordinators for dissemination of information as well as giving notice of any planned meetings and the information is received by most beneficiaries. Those that do not listen to the radio (or are from a different vernacular) receive the message from other beneficiaries. Beneficiaries have also to be notified of any regulations in regards to keeping Hoodia plants. The application for permits was done through the project channels for the beneficiaries and the Ministry of Environment and Tourism (MET) issued the permits. MET did visit some areas of the beneficiaries in the Hardap and Karas Regions. The further legal requirements for renewal of permits or the trade in hoodia should be explained in detail. A contact details list for Karas and Hardap Region respectively would be a suggestion.

Extension officers of the Ministry of Agriculture, Water and Rural Development are not yet involved with hoodia. Currently the status could be kept, however, as this is also an agricultural activity and commodity, the extension officers could act as focal points and assist the beneficiaries further in information dissemination.

Regional councils might be informed about direct project activities and progress, but as their situation changes and there are new challenges to a project, this information is not disseminated sufficiently. It was also mentioned that Regional Councils are invited to meetings of project activities, however, these are not all attended. This might be due to other commitments, but should be minimized in order for all stakeholders to be aware of the latest information.

The HCPRP project was a pilot project and was analysed also in this regard. Developing and implementing a project in one single area would have resulted in better success and yields of hoodia. The beneficiaries of this project were scattered over a wide area in two regions. It is understandable that management, control and information dissemination of such project is much more a challenging task. Beneficiaries harvested their Hoodia in March 2009 and by January 2009 still did not receive any payment. This was due to circumstances of the stale hoodia market. It is thus also understandable that beneficiaries started developing a negative sentiment during the last months of the project and their main priority was to receive a financial return for their efforts. In agriculture there are not many other commodities, where payment time takes so long. As the new seeds were planted again, motivation was somewhat put on hold by many beneficiaries. Beneficiaries living in poverty are constantly trying to balance daily needs and were later not devoting their time and efforts to the fullest on their hoodia plantings. Many beneficiaries joined the project under the assumption that hoodia is a very lucrative business. Fortunately the hoodia plant is a very tolerant crop and can survive times of neglect, especially in regards to receiving less than optimal watering.

Beneficiary selection was implemented according to targeting the most vulnerable. The most vulnerable need assistance in all aspects and especially in regards to finances.

Although financial problems did not seem to be a major constraint for the planting of hoodia, it did affect the optimal production, especially in towns where the cost of water is market related.

The project did not inform the beneficiaries completely about current market trends in 2009 and was done so justifiable. If current market trends would have been informed to the beneficiaries, the project would have halted automatically. From the Namibian hoodia industry there were hopes that the hoodia market might stabilize earlier and thus these hopes were interpreted to keep on the targets and objectives of the project.

One suggestion that could improve further efficiency in a project is to deal with non-performers of the project more efficient. Non-performers can have a detrimental effect on especially surrounding beneficiaries. The selection of beneficiaries was done by the Regional Councils. The non-performers could not be dismissed by the project without full consent of the Regional Councils. New beneficiaries would obviously also be chosen by the Regional Councils. Non-performers relate a message to the surrounding area that the sponsored infrastructure and assistance does not necessarily have to be utilized for full efficiency.

The distribution of vegetable seeds to augment the beneficiaries' household food, was a good thought, but was utilized by only two interviewed beneficiaries on a very small scale. Although a large proportion of beneficiaries indicated that horticulture was an economic alternative to growing hoodia, the actual implementation of this interest did not arise in the field with substantial results. In urban settlements, the cost of watering vegetables might be the largest inhibiting factor. The project beneficiaries were promised pipelines to water their garden more effectively but were not yet delivered at the end of January 2010.

After project close-up, what will happen to the infrastructure? Economically and financially it could be in the interest of the most vulnerable to sell their donated infrastructure as this would render the highest return on their investment in joining the project? Unfortunately the current stalemate in the hoodia market could contribute to this.

Projects that have a long time to amortize are prone to more defaults, if the beneficiaries are vulnerable. If hoodia would have been a three months cash crop, the financial benefits are realized much faster and even financing could be obtained easier (personal loans). Hoodia with a very long production cycle are much more challenging.

2.4 Project Recommendations

According to the results from the field survey and further discussions the following suggestions for improvement can be recommended.

- Ensure that the current infrastructure is utilized correctly to the advantage of the beneficiaries.
- Beneficiaries have to be updated constantly after project close up regarding the hoodia market as well as any possible alternatives.
- Beneficiaries should be advised to keep or apply for membership in an association in agriculture.

- There is room for improvement in updating the skills of the beneficiaries. As the current crop is growing, different types of beneficiaries (small and XL) have different needs in further training.
- Some financial information needs to be released to the beneficiaries so that they can plan and budget also according to their plot size. For example any size plot holder should know that his next value crop will be worth N\$ “X” amount at current market value.
- Since the beneficiaries were compensated more than the current market price, there should be no high expectations that their next crop will also realize such high prices.
- Membership could be guaranteed to the beneficiaries for a few years, if their combined harvest is bartered to HOGGRAN in exchange for paid up membership.
- Beneficiary selection was done accordingly to the objectives, although many beneficiaries also stated that they had heard of the project at the last minute and just managed to apply in time. In various communities, the co-operation and information dissemination is not as effectively as it ought to be. Some community members deliberately do not disclose public information to the whole community and this should be avoided.
- Development projects need to consider in agriculture/horticulture at least one full cycle of the plant/commodity that is cultivated. Hoodia takes at least four years from planting seeds to maturity. The project life span should have been at least extended a little longer than this time span to ensure correct knowledge transformation to beneficiaries. Project implementation was under considerable time pressure to achieve results that cannot be expected to realize in the un-assisted environment for beneficiaries.

3 Hoodia’s financial implications for poverty reduction

Under natural conditions it takes not less than four years for a hoodia plant to reach maturity and harvest. Under natural circumstances plants can live an estimated 20 to 30 years depending also on the erratic rainfall of the southern Namibia arid climate.

A commercial hoodia plantation starts with planting seedlings 10cm apart in a nursery. This relates to a 100 plants per m². With a good germination rate of about 80% this relates to using 120 seedlings needed per m². Seedlings are then planted out in a commercial plantation of about 35 000 plants per hectare. At least two full time positions are needed to tend to general matters on each hectare. This can increase to adding another two casual labour for four months per year. This labour includes everything from preparing seedbeds, planting seeds and transplanting seedlings, weeding and pest control, harvesting, washing, cutting, chipping and drying the harvest.

Table 2. A gross margin budget for a hoodia plantation adjusted to a 200m² small scale plot.

| N\$ | unit | Per year | 4 years/1 ha | 200m ² |
|--|--|------------------------|----------------|-------------------|
| Seedlings – 42,000 | 50c @ | | 21,000 | 420 |
| Two full time positions per year | 750/month | 18,000 | 72,000 | 1,800 |
| Two casual positions for 4 months casual | 750/month | 6,000 | 24,000 | 600 |
| Watering costs | 12/month | | 30,000 | 576 |
| Chemicals, repair infrastructure | | | 40,000 | 800 |
| Infrastructure: fencing + irrigation + tank + basic water supply | 8000 + 20,000 + 15,000 + 20,000 | | 135,000 | 2,500 |
| Marketing costs, testing, sterilization | 30 x 1000 | | 30,000 | 600 |
| Interest on loan | | | 120,000 | 2,400 |
| | | | 472,000 | 8,651.52 |
| Low harvest 0.3kg dry per plant | X 35 000 | = 10,500kg @ 120/kg | 1,260,000 | 25,200 |
| Sale | | | | |
| Gross margin | | | 788,000 | 16,548 |

The low market price of N\$ 120/kg dry weight hoodia was assumed as a selling price. A 200m² plot harvest would earn a profit of N\$ 16,548 after four years, meaning N\$ 345 per month. Own labour as well as family labour is additionally compensated at N\$ 750 per month. Thus a hoodia grower associated to a current beneficiary could earn a monthly deferred income of N\$ 750 per month as well as a deferred monthly profit of N\$ 345 per month. The low dried harvest yield of 300 grams per plant is currently the maximum yield achieved as in the Vaalgras area.

Watering costs and infrastructural costs for a small scale farmer have been assumed to be an average between village and communal farmer. The village farmer has usually no need for infrastructural development as his household has a water connection point supplied by the village authority. The village farmer finances infrastructural costs through his monthly water usage fees. Communal farmers have lower usage fees than village farmers, but need to develop their own water supply infrastructure to their respective plots.

Village farmers would not have the available space to plant 200m² and would rather find suitable land of up to 100m². Developing suitable plots outside towns and far from the residence is not an advisable option. Safety, theft as well as possible no water connection could render such plots not viable. A 100m² plot could roughly earn an income of N\$ 300 per month.

A possibility exists for village farmers to rather concentrate on planting seeds and then selling seedlings on to communal farmers. This would minimise the spatial problems for growing hoodia in urban settings. Producers and communal farmers who have better access to suitable land could then grow these seedlings to maturity. The ability of communal farmers to purchase these seedlings from village farmers is rather limited.

Selling hoodia products to South Africa would not incorporate too many risks of foreign currency fluctuations. Selling hoodia products internationally can result in wide fluctuating prices as the exchange rate of the two major currencies of international trading partners fluctuate considerably. During the last three years the exchange rate of the Namibian Dollar to the US\$ varied with up to 30%. A depreciating exchange rate is of no disadvantage to hoodia producers as importing inputs for hoodia production are not necessary.

4 The Hoodia Growers Association of Namibia

The Hoodia Grower's Association of Namibia (HOGGRAN) was founded in 2006 and officially formed in 2007. It is an association open to all producers of Hoodia and its derived products. An annual general meeting (AGM) is held in March annually in Mariental. HOGGRAN had a membership of 200 in 2009. For 2010, it is estimated that the membership will be reduced to 150 members. Membership fee was the preceding years N\$ 50 per producer. This fee is below the usual average of such organization and places no restrictions on entry for any person who has an interest in hoodia. Large producers usually give voluntarily more funds and donations of up to N\$ 200. With current costs associated to any organization, the association can also not produce its functions in any way efficiently and timely. During the last years, numerous committee members spent voluntarily many hours and personal expenses in this association. This is greatly appreciated by the fellow membership. These actions are however also not sustainable over the long term.

HOGGRAN had an ambitious plan to act as the marketing arm of the hoodia growers industry and earn a small commission of 2% on all hoodia sales from Namibia. Unfortunately HOGGRAN made no effort during its primary years to establish itself successfully as a marketing channel for its members. HOGGRAN is also in the process of establishing a mutual deal on access and benefit sharing and they had four meetings in the last two years. It would have been appreciated by the public much greater if this benefit sharing scheme would have been compiled and created with the start of HOGGRAN. Government as a partner to the industry needs communication partners. HOGGRAN was in the advantageous position to create such rules of ethics and fair trade.

There are numerous associations which co-ordinate very well with Government Ministries. These Public-private partnerships respond to industry needs and request the implementation of corrective action, through new policies, bills, temporary or permanent moratoriums, levies, fees, custom surcharges and taxes, etc). Government obviously also needs within Ministries the capacity to verify any proposals or suggestions from the private sector. The hoodia industry does lack a sound base of public sector employees who are knowledgeable regarding the needs of the Hoodia industry. Freedom of association should always be adhered to; however, requirements can be advised to be imposed on by government. One such advice would have been to levy the access and benefit sharing agreement with each export permit. If government is not in the legal

position to levy this share, then a receipt could be a requirement that the required levy was paid. This would take the responsibility away of government administering and controlling the funds, although still adhering to the objectives of such levy.

HOGRAN has 70% membership of communal farmers and 30% commercial farmers. Commercial farmers produce 90% of the Hoodia products. There are also a few non-growers who are members of HOGRAN as well as a few people from towns. HOGRAN currently does not see any justification in joining existing agricultural unions as their umbrella organization. There are some disadvantages in joining any of the current agricultural unions but the advantages should outweigh them. Some members would obviously retract their membership if a specific union is chosen, but HOGRAN should investigate its long term viability of not joining any union. Another option that was mentioned was forming an umbrella for all indigenous plants and their products in Namibia and this would need further investigation.

As mentioned earlier, the estimates are that membership for 2010 will be reduced and this number could reduce further with project beneficiaries not renewing their membership for 2010. HOGRAN activities for the forthcoming years do not seem to be viable and serious strain will be placed on its members.

A Grower's or Producer's association should concentrate not on increased membership fees, as this would be detrimental for any increase in membership's numbers. However, there should be an increase in service delivery which can take many forms. Information dissemination is usually the first step. Members should be informed regularly about current matters. If many members do not have access to the usual communication channels, ingenious methods should be found. The cell phone as one example is a communication channel that is accessed definitely by over 95% of all its members. Further service delivery by HOGRAN could be to act as a central place for royalties, levies, processing of all necessary permits with the relevant authorities, possible value adding to the product of the association and marketing efforts by the association for its product. Marketing efforts are crucial for any product. A central accessible place for the association is also necessary, although this always comes with a cost of appointing employees.

HOGRAN has received from the project funds of HCPRP for strengthening and these funds were utilized effectively in promoting hoodia in Namibia on the Windhoek Agricultural Show as well as developing the website. The website is a refreshing site and could include more information, especially about the members, its social responsibility and marketing efforts. At the international trade shows attended by HOGRAN in Europe and the Far East, interested persons were informed that HOGRAN does include also members of the indigenous people. The website does reflect this. Usual association's website act firstly as an information and marketing tool for its potential clients, as well as information for the members and an address list of its members.

Box 1: SWOT analysis of HOGGRAN

| Strengths | Weaknesses |
|--|---|
| <ul style="list-style-type: none"> - a unique product that may have numerous selling points, - a potential very strong membership encompassing many producers on different scales, - a current motivated, optimistic and devoted leadership | <ul style="list-style-type: none"> - administrative, communication and financial constraints, - no current central place for the association - inaccessible to its members, - inactive product marketing/selling platform, - no current benefits for members, - no vision that members will have benefits in the future, - difficult to reach effectively its broad membership basis |
| Opportunities | Threats |
| <ul style="list-style-type: none"> - becoming the sole bargaining agent for the hoodia industry, - ensuring benefits and access sharing for all participants, - endorsing quality control for all hoodia products | <ul style="list-style-type: none"> - no demand for hoodia and a future market, - a further reduction in membership, - other producer countries tarnishing hoodia by selling low quality or fake hoodia derived products, - non members utilizing possible advantages without needing to be members or marketing through the right channels. |

HOGGRAN can and must play a vital role in the future. The success of the association will depend largely on the future market of hoodia. If there is any further potential in the hoodia industry, HOGGRAN should position itself early to act as a pivotal role for the complete hoodia industry. Basic ideas and plans should be developed now to ascertain that with any new developments in the hoodia industry, HOGGRAN positions itself strategically to become a leader in the industry. HOGGRAN is not the current proposed implementation vehicle to assist further the beneficiaries in their needs after project close-up. A proposal that HOGGRAN should receive the current beneficiaries harvest is a favourable gesture. However, there are also opportunities of conflicting interest. HOGGRAN members have their own financial needs and need to sell more of their own hoodia for personal justifiable reasons. The beneficiaries’ harvest is adding pressure on a current oversupply and this and could strain current market conditions further. HOGGRAN should decide and confirm within the association a fixed timeline for the sale of this harvest as well as the proposed use of this income. A useful decision process would the AGM of HOGGRAN in the beginning of March.

4.1 Government support

The Ministry of Environment and Tourism (MET) was the lead agency in commercial hoodia production by controlling a CITES product. Registering as a hoodia producer encompasses now very little red-tape. Other Ministries were less involved in developing and structuring the market. The Ministry of Agriculture, Water and Rural Development does not react efficient on new products and opportunities by supplying new research and elevating an indigenous commodity to an advanced level. Sufficient research

infrastructure and personnel are missing in this regard. As an example, a provincial Agricultural Ministry of Western Australia did embark on specific research on the commercialization of hoodia. The current main constraint to commercializing hoodia was the access to viable quantities of plants as it takes significant time (4-5 years) to grow from seed. Attempts to propagate by using cuttings proved unsuccessful as to date there is a very low strike rate from this technique. The research project involved the investigation into the technical viability of using Invitro Soil (IVS) technique on *Hoodia gordonii*. If IVS protocol could be established, it was intended that this plant would be bulked up (under license) to provide sufficient plant material to extract the active constituent for commercial application. The project was managed internally by Department of Agriculture and Food Western Australia (DAFWA) under the Rangelands Industry Development project in collaboration with the IVS Propagation Unit. Although this research project was a success, it still came to the conclusion that IVS was a too slow process to be used as a suitable propagation method. This provincial department did however react on changes and demand in the market and investigated a foreign commodity, which is suitable to be planted in Australia. For a provincial government to embark on such activity with related costs, it would be assumed that the demand must arise from a representable number of potential growers. However, the request for this specific research originated from one person in the province.

Israel is also in the process of investigating hoodia further. The exact levels of results achieved are unknown and are based currently on rumours. In this regard Namibia must provide and create its own enabling environment and react to new market needs. Further recommendations are presented below in this paper.

5. The future of Namibian hoodia in a value chain

The value chain describes the full range of activities which are required to bring a product or service from conception, through the different phases of production (involving a combination of physical transformation and the input of various producer services), delivery to final consumers, and final disposal after use. Moreover, there are ranges of activities within each link of the chain (Kaplinsky). A product is brought to market through a combination of activities that all contribute to its final value. A value chain analysis can indicate probable suggestions of commodities that have low returns or have little bargaining power.

Currently the marketing of hoodia is occurring on a very small scale. Some commercial producers have their fixed supply chain with low demand and orders are irregular. A value chain analysis can be done in good detail and would be of a too large scope for this consultancy. As the market for hoodia is depressed by factors other than the usual demand and supply, the efficacy and safety tests of the product does need priority attention. If this situation can be solved and proved scientifically, the hoodia market will face again the same challenges as before. Most probable the same approach and marketing would be followed with the marketing of hoodia and it could happen again that consumer confidence will be lost finally forever. Namibia must brand its hoodia as a quality product which even differs greatly from all other sources. Quality control must be centralized at one point to ensure that consumer confidence can increase. Creating a monopoly is not a suggestion, but it would have been to the advantage of Namibia to reflect a standardized product with high qualities. As was mentioned by hoodia producers, the P57 percentage does vary a great deal. One gram of dried hoodia contains

about 0.15% of P57. Plantation hoodia from South Africa indicated in one test a value of 0.02% in comparison to natural veldt hoodia of the Helmeringhausen district of 0.255%. A maximum P57 content of 0.4% was measured in another trial (personal comm.2010 J Miller). Hoodia was always the product that was sold without any specific branding for Namibia's product. Although this does not prove or satisfy any efficacy or safety concerns, the depressed market might have been still better with improved sales than at the current stage.

The value chain analysis can assist with understanding problems of market access. The following are a few critical questions that Namibian producers have to carry knowledge about. With a very optimistic assumption that the hoodia market can be increased through successful efficacy and safety tests and results, how would the market look like for Namibian producers?

- If a new license-holder receives the sole rights, will he give market access to Namibia?
- Will a new license-holder ever be interested in creating a new market for related hoodia products?
- Is there not too much risks involved for the license-holder that he will never be able to recuperate his research and development costs, as piracy was a big problem until last year. All producers worldwide sold a product and waited for the confirmation (regarding the tests) to come from one single license-holder. Was this fair trade?
- A license-holder in hoodia derived products is also bound to agreements and benefit sharing for using traditional knowledge. Currently all other competitors in the industry can produce and sell the same ingredient without these commitments. Is this fair trade?
- Will namibian producers be interested in selling hoodia to a lead firm and license-holder and receive a fixed price, that will definitely not be along the experiences of the previous market?
- Will Namibians be thus willing to sell a basic commodity to a potential license-holder and be unable to add value to its product? A new license-holder would need to maximize and add value to his chain to recuperate development and research costs.
- Is it a fair deal by giving a license-holder all the rights for using hoodia as an active ingredient in his (food) product and other hoodia producers can still sell hoodia products in a diversified market of capsules, gels and other products ?

Quo Vadis? Namibian producers through HOGGRAN would need to find common ground on above mentioned questions first. A potential solution is to market a common Namibian product in a joint effort. With any positive development in the hoodia market could Namibia acquire production capability? Producers that gain access to a chain's lead firm are pushed to upgrade their production capability very quickly. The lead firms are very demanding with regard to reducing cost, raising quality, and increasing speed. This would be possible through an organized network of information dissemination and could benefit small-scale and large-scale producers. Reducing poverty in rural areas could be achieved better if they are members of such network or organization.

Referring to the unique situation of hoodia and a single license holder there must be a thorough understanding of the distribution of gains along the chain: The chain would obviously be governed by the license holder. The ability to govern often comes from

strength in particular competences such as branding and marketing, which command high returns, but are difficult for developing country firms to acquire? Developing country firms tend to be locked into production activities, in which they manufacture to the specifications of the lead firm. Since many producers are capable of doing this, competition is later intense and returns are low.

Should Namibia find leverage points for policy and organizing initiatives? Understanding the workings of a chain helps to identify levers where policy and/or organising could be used to improve the distribution of gains. But in the case of hoodia, who would have the power to change a situation if you are dealing with a single license-holder?

The following excerpt does indicate possible avenues that could be suggested as in a source titled 'RESPONSIBLE BUSINESS AND LIVELIHOODS OF THE POOR'

Responsible business requires companies not to take advantage of poverty and the marginalisation that often accompanies it (e.g. by paying less than a living wage, by denying land rights without fair compensation). Moreover, there are instances where companies actively seek to reduce poverty (e.g. by locating factories in deprived areas, investing in education and health, providing poor people with market access).

There are seven main ways that business can have a positive influence on poor people's livelihoods:

1. Creating employment
2. Providing adequate working conditions
3. Increasing or securing the poor's assets
4. Investment in infrastructure and technology
5. Developing human capital
6. Providing appropriate, affordable goods and services
7. Fostering a sustainable natural environment

Business, especially influential companies, can also have an indirect impact on the poor by encouraging good governance, greater transparency, policy reform, etc.

Source: Responsible Business and Sustainable Livelihoods: NRET 2001

Globalisation is a main centre point of hoodia as this product does indicate a possible demand world wide in developed countries that have a burgeoning problem with obesity. Value chains are repositories for rent, and these rents are dynamic. Rents can be described as a comparative margin or profit that can be realized on a product which is not necessarily in relation to the cost of production. This rent can be increased for Namibia in creating a strong brand for the hoodia's industry product. Marketing rents are realized by firms that possess better marketing capabilities and have a valuable brand name. Namibian producers can also gain from the rents provided by parties external to the chain such as policy rents. This can be created by operating in an environment of efficient government and constructing barriers to the entry of competitors (from other countries). Simultaneously with effectively functioning value chains, there is a need of some degree of 'governance'. Governance ensures that interactions between firms along a value chain exhibit some reflection of organisation rather than being simply random. Value chains are governed when parameters requiring product, process, and logistic qualification are set. Initially the basic rules include the concern with meeting basic cost parameters and guaranteeing supply. Currently, the critical success factors are known as "QPD" (that is quality, price and delivery reliability). More recently, the "rules" of participation have increasingly come to include conformance to international standards such as ISO9000 (on quality), ISO14000 (on environment), SA8000 (labour standards) and other industry-

specific standards such as Phyto-sanitary and HACCP (hazard analysis and critical control point) in the food processing industry. These parameters govern a value chain.

The hoodia industry was also a “buyer-driven” commodity chain in which large retailers, marketers, and branded manufacturers (initially) play(ed) the pivotal role in setting up decentralized production networks in exporting countries. The hoodia industry was also in the run for the largest industry partner to upgrade the product. Upgrading the product would have meant that the license-holder can provide value to the final customer, is relatively unique in the sense that few competitors can copy the process, is difficult to copy, which is where the barriers to entry exist. The capacity to innovate therefore arises from concentration in these competences.

In many chains, the buying function is becoming increasingly concentrated which increases the power of these buyers in the value chains. On this note not much value can be added in a Namibian context, but the change in buying strategies could assist Namibia. Currently there is considerable emphasis on the environmental practices of the buyer’s suppliers. This is a comparative advantage to Namibia. European companies are directing their buyers to heed the food miles that the product has to travel to reach its final destination and Namibia is far from the big target markets. The carbon footprint should be relatively low in comparison to other products, although transportation costs does increase the food miles. Buyers will also often have strategic judgements about specific sources of supply. They may favour particular regions or they may prefer to source from particular ethnic groups.

Supply chain management techniques can assist to upgrade systemic competitiveness. The durability of relationships between buyers and suppliers is linked to the number of suppliers with whom buyers cooperate. The development of long-term and high-trust relationships generally requires a smaller number of suppliers, so the number of, and the degree of concentration of key suppliers is important. A centralized quality and marketing platform could suit hoodia to its advantage. A large number of suppliers would be in the Namibian case not feasible. Creating a smaller number of suppliers is possible, where selected suppliers act more as collection points for the numerous small suppliers. A supply chain usually starts to dysfunction if the supply from the smallest suppliers is erratic and not constant over time. Supply chain management is essentially around the legislative elements of value chain governance.

In general, the larger the firm, the more influential its role. A license-holder should own to what degree the greater shares in sales, of chain value added, of chain profits, a relative rate of profit, of chain buying power, control over a key technology and distinctive competence and holder of chain “market identity” (e.g. brand name) ? Governance could essentially assist to what extent Namibia is a share-holder of chain power and may be related in complicated ways to the relative size of a particular firm in the chain.

In the Namibian case, the producers could be connected to the global markets via the lead firm. There is a particularly problem for Small and Medium Enterprises (SMEs), since by their size; they are required to sell through intermediaries. These intermediaries may not only siphon off much of the profit in a value chain, but may play an important role in enabling or blocking the capacity of SMEs to upgrade. Government’s role as part of the governance in the value chain would be needed here.

International experience suggests that a key factor underlying the capacity of SMEs to insert themselves effectively into global value chains is when they combine to engage in various forms of joint action. There are a variety of forms of joint action which might include:

- Lobbying government for assistance
- Undertaking joint activities, such as quality auditing and branding.

But there is also a second direction that is away from government rules and trade policies to where the consumers set the rules nowadays. These private rules include quality and environmental standards, and increasingly also labour standards. Elaborate bureaucratic procedures are developed, which require all suppliers to document their activities in great detail, such as is also evident in the beef export industry of Namibia. This has proven to be a problem for small communal suppliers. Even SMEs in high income countries struggle with all the administrative work. The outcome of this development is that SMEs will find it increasingly difficult to participate in global value chains. The big suppliers are forced to adhere to many of these rules and need to do their procurement only from approved sources. The globalisation of value chains offers a real possibility of linking into more profitable export markets. SMEs in Namibia often simply do not have access to the necessary resources, equipment, materials and professional management skills to meet these conformance requirements which require them to operate at a level beyond their local environment. An ISO accreditation does not consider the size of any business, but rather the processes within the business or farming operation. These processes tend to disadvantage the small producers. As all possible leads of hoodia seems to concentrate on health benefits for the consumer, the consumer would like to have an assurance that Namibia's hoodia is as clean as possible, irrespective if it originates from the wild, from plantations or from villages. Products for the health market have more stringent requirements than the usual food market.

Globalisation opens up many possibilities for small producers in Namibia, but also requires sophisticated reporting and adherence rules. Countries who import a commodity that is in high demand, do so within easy references as long as they do not have an own market. As soon as they have an own supply or their own producers are coming under pressure with sufficient supplies, the easiest way to restrict or limit further trade is with phyto-sanitary regulations. Small producers are most vulnerable in not being able to fulfil these new imposed restrictions.

For the hoodia industry this requires thinking in dual terms. The first is by seeking to derive positive policies from HOGGRAN's involvement in the preferred value chain in order to pursue upgrading possibilities at the macro, meso and micro levels. Above mentioned points could all be combined into a more centralized, active organization for the hoodia industry. But secondly, and simultaneously, it requires formulating defensive policy strategies in order to ensure some measure of protection for the poor against the negative implications of globalisation.

A detailed value chain analysis was not in the scope of this work, but critical questions have been highlighted. As the future of hoodia is in such precarious position related to a secure market, there are at least two options for hoodia producers to follow in the future. One option is to keep the current marketing channel(s) that exists (keep the status quo), while the other option would be to sell only to any potential license-holder that might take up again the future prospects of hoodia. This is for the hoodia industry to decide for itself.

6 Recommendations

Reducing poverty in the Karas and Hardap Region is of great concern to the Namibian government. Utilising commercial grown hoodia as a tool for poverty reduction did hold promise until 2009; however, the further development of enlarging or multiplying the pilot project is not feasible within the current market stalemate.

As was proposed by the regional hoodia industry stakeholders of Southern Africa in Cape Town at a meeting on January 25, 2010 it was mentioned that funding for the verification of all existing results is now the main concern. The hoodia market will follow a declining trend with the current status quo. The amount of approximately N\$ 3 million is needed as a first step to verify the data and tests done by Unilever, which are now in the possession of Phytopharm. A summarized budget of Euro 248,000 is attached to this document and does not include administration costs. Thus a figure of N\$ 3 million is used for rounding purposes and it is estimated that the figure will not be below N\$ 3 million. A more detailed budget including the proposal should be forwarded by HOGGRAN soon. It is currently assumed that the proposal will be a fair reflection of the concerns and interest of the complete hoodia industry.

It would be in the best interest of all stakeholders to fund this amount jointly, being all stakeholders in Namibia and Republic of South Africa. Botswana stakeholders could also be requested to join in this first step. There are four big risks involved in funding this activity.

1. This funding could be lost with no tangible results if the verification process reveals no future possibilities. That would mean a loss of the complete amount of N\$ 3 million.

This N\$ 3 million also involves the first steps in researching whether there are any additional or side stream effects that could be utilized from the hoodia plant. As is known from traditional knowledge, hoodia might be beneficial to human kind in regards to delivering positive effects for diabetes or lowering blood pressure or gout. Here it is suggested that the first basic tests are done to investigate whether the traditional knowledge can be verified with scientific facts.

2. These above mentioned first basic steps might prove futile
3. or positive and promising.

If futile, then the remainder of the N\$ 3 million could also be regarded as sunken cost. If there are any signs of any slight benefit for human kind, then a whole new array of scientific testing, research and development would be needed with additional costs. This latter would be done with an industrial partner and expert.

4. If none of the above two risks would be taken, then there exists a risk that another partner (country or company) might fund this and keep the benefits. Then the Namibian hoodia industry would again be disadvantaged as was previously the case. Obviously the only good risk would be in this case, that the other partner might lose all, if results are completely negative.

Joint funding from Southern Africa is in the interest of all stakeholders as ethnic tribes also inhabitate all concerned countries. The Republic of Namibia and Republic of South Africa also have numerous agreements, treaties and Memorandum of Understanding with

each other. For the sake of poverty reduction, it would be in the interest of all countries to fund this jointly.

The Namibian hoodia industry stakeholders first have to implement strategic targets and prove their commitment in involving all stakeholders and producers in Namibia. Currently, commitments by the industry cannot be implemented due to financial constraints. Government would need reaffirmation that the complete hoodia industry has the same concerns and includes all interests.

It is then recommended that the Namibian government jointly or individually funds the current proposal for the verification of the current data. This action should be implemented speedily.

The drafting of the legal documents for such funding will be very intricate. If any potential benefits are indicated from the scientific tests on hoodia, again some intellectual property on hoodia might arise. The existing legal requirements and contracts were done within the Republic of South Africa and are applicable there. This potential new drafting of legal documents should include that the funding party(ies) would be the holder(s) of any possible intellectual information. This is extremely important that entities doing the tests do not benefit individually from the intellectual property.

The issue of traditional knowledge and legislating benefit sharing agreements have to be seen critical, just and fair. If the Namibian government's action results in a second potential for the hoodia industry, the Namibian government would also need to pay royalties and benefit sharing to the indigenous people of other Southern African countries. Although the Working Group of Indigenous Minorities in Southern Africa (WIMSA) has made great strides in proposing equitable solutions, the non controlled markets will always ensure that there is a great deal of non payment. Namibian producers were previously also guilty of this action. With adding value to any product, somewhere there should be a line where traditional knowledge is limited. Using hoodia for medicinal purposes such as was done previously by the indigenous people needs definitely benefit-sharing agreements. Adding value to these plants for modern times and enhancing the final product, completely different to the original commodity, needs further discussion up to where benefits and commitments are shared. Globalisation does positively take such issues into consideration, socially. However, financially these issues have their limitations as consumers and producers are prepared to pay a premium or royalty also to a certain level only.

After the N\$ 3 million funding project has been completed, the projections are fourfold.

1. One result might be that the verification process of the previous Unilever's tests does not indicate any further possibilities for hoodia.
2. The previous Unilever's results do indicate that further investigation is necessary and that a possible other avenue might hold more potential. These possibilities might be in a different extraction process of P57 or using P57 in another form.
3. There is no further potential for any side stream benefits from hoodia.
4. There are further potential benefits for any side stream benefits from hoodia.

Results 1 and 3 indicate a joint loss in the investment of N\$ 3 million.

Results 2 and 4 indicate that further detailed testing is necessary of approximately N\$ 30 million.

These further tests could be funded initially from the same source as recommended above or other sources. After this N\$ 30 million project research, a new partner and developer could be engaged to purchase the license and develop the hoodia ingredient into a finished product (be it food items, medicine, drink, etc). Currently no corporate company is interested in funding this research. The reasons are the current world economic downturn and a current deficiency in safety and efficacy proof, which has led to lost consumer confidence. The projections for a potential benefit seem to be vague and may not be positive.

A single license-holder would like to be guaranteed the sole rights in utilizing hoodia derived products. In the current market, there is a huge free rider effect, as there were many entrants in the hoodia industry selling hoodia derived products based (or anticipated) on the benefits which were to be investigated and researched by the license-holder. Other reasons not known publicly must have been also involved.

To a certain degree the N\$ 30 million project investment could be sold again to the new partner and license-holder. If there are positive scientific indications this would be intellectual property that could be traded.

The recommendation to request funding of N\$ 3 million for the next step is the easiest part to implement. A very difficult issue is the implementation vehicle to be used to implement and manage these funds on behalf of the Namibian government. In Namibia there are numerous organizations and committees that must be part of this process. The Indigenous Plants Technical Team (IPTT) would be a good starting point as a national convener and acting as a management board. Other main stakeholders could be (m)any of the following:

- HOGGRAN in a strengthened form and affiliated to an umbrella organization in organized agriculture or indigenous products,
- organized agriculture,
- Hoodia Working Group,
- Government from various line Ministries including Ministry of Trade and Industry, Office of the Attorney General,
- WIMSA,
- Legal Assistance Centre,
- possibly the Agronomic Board and
- potential donors (who would assist or share in funding this activity).

If the costs are a loss and no tangible results emanate from the N\$ 3 million project, this project would be easy to close-up. If, however, there are possibilities of further benefits in the hoodia industry, utmost care is needed to manage the further research. The intellectual property could be open to abuse by many partners, if the implementing vehicle does not have sufficient control. There could also be conflicts arising with the current license-holder of the patent (CSIR and Phytopharm). These two entities could propose that a new patent being derived from the old patent, still involves them as an influential partner or even the sole holder of this new patent. The legal requirement and intricacies are definitely complicated and have to be investigated further.

An easier option against all these intricacies would be for the Namibian government to abandon this project in totality. There exists then the danger that the hoodia industry receives a new partner globally and Namibia is again disregarded. The hoodia industry

will benefit producers largely in other countries. Then hoodia will also not have any potential as a tool for poverty reduction in Namibia.

6.1 Recommended action plan.

- Government and cabinet decide in principle for one option.
- Government investigates the possibility of including other Southern African partners on ministerial level.
- Government investigates the legal intricacies involved in such joint operation and its rights, privileges, responsibilities as a shareholder of such project (intellectual property, patent rights, existing benefit sharing agreements applicable to cross border initiatives, etc.) up until the point where government would voluntarily give, sell, cede, nominate its commitments back to the industry.
- Government receives confirmation from a unified Hoodia Grower's industry, regarding their interest and commitment to the process. Their answer would be affirmative, but with freedom of association their commitments are not guaranteed yet.
- Government proceeds on the recommendations in lieu for poverty reduction.

The hoodia grower's industry should take a long term view of how they would like to market their hoodia. There are many benefits and (potential perceived) disadvantages for the hoodia growers. One fact is, that the expectations of the previous high prices received for hoodia, will never realize again in the future. A high price with some form of economic rent is only possible if value will be added to the hoodia commodity. The value added to the commodity will be to the benefit of a potential new license-holder who will have to do its own research of approximate US\$ 200 million (figure derived from previous license-holder). The recommended funding of N\$ 3 million stands in no comparison to the market development of a new product.

The hoodia grower's industry has an option to nominate, propose, recommend, create, establish a centralised marketing channel to ensure that benefit-sharing agreements are adhered to, quality control is implemented and poverty reduction involved. As a social responsible entity, the marketing channel should ensure these benefit sharing payments. The current existing benefit sharing agreements in South Africa have to be investigated, whether they are applicable also to the Namibian industry. It is not recommended to form monopolistic structures in Namibia; however, the concerns of all stakeholders including the traditional knowledge holders have to be included as well as forming a simplified structure to collect any fees or royalties that are fair and easy to collect. Government would need from the hoodia industry a structured recommendation in this regard (if any). In international marketing and the lost consumer confidence in hoodia, it can be anticipated that hoodia will never sell as a brand name again. The possible new (if any) product could be marketed and branded differently. The HCGPRP project has completed consultancies in 2009 involving the Hoodia Legislative Desk which can assist in providing legal background to some above mentioned issues.

Another option and pathway for the hoodia industry is to take the advantage of the N\$ 3 million research (if any) and let it be known to all stakeholders, producers, growers and value-adding enterprises and let the free market finds its own equilibrium for the demand and supply of hoodia again. This option would be a possible tool for poverty reduction in

Namibia, albeit drastically limited than the other recommended option and no guarantee of any returns over the long term.

Weighing the benefits of funding the N\$ 3 million from Namibia only; does Namibia have the capacity and capability to implement and manage all possible benefits from the N\$ 3 million funding itself?

Why invest at all in hoodia? Unilever had projections of the US market being worth about 100 tons of hoodia extract. This quantifies to the hundredfold of 10 million tons of hoodia dry weight and a 100 million tons of hoodia plants (wet). The US market was the primary target market as the health regulations are somewhat easier than initially penetrating the European market. To receive approval in the US market from the Food and Drug Authority (FDA) tends to be

less time consuming for a new food item and would take approximate one and a half years. Receiving approval for the importation of a new food product to the European Union takes more than two years. Once FDA approval is received, usually the European approval process tends to be easier.

Taken this estimated, potential amount of hoodia into consideration, the Namibian harvest in 2012 could be 1750 tons of dry weight and includes the plants not harvested in 2008, 2009, 2010 and 2011. Thus the Namibian harvest in 2012 could be 17.5 tons extract. According to the old projections of Unilever and their planned food commodity, there would be a possibility of increasing the plantations fivefold for Namibia. Co-operating with other Southern African countries, the hoodia supply would be needed to be shared. Most equitable would be to share in equal proportions to funding inputs. The Republic of South Africa exported in 2006 already 500 tons dry weight, which was at least the ten-fold production in comparison to Namibia. The potential market figure is difficult to project, as a new hoodia derived product is not yet known and in which form it would be offered into the market (if any).

Is there any future for hoodia at all? This is a most complex situation. There are rumours that Israel is/has applied for a patent in regards to some specific hoodia species for some medicinal value. This can only be verified when the right is officially patented. Phytopharm in South Africa has also applied for a new patent on hoodia regarding benefits for diabetes. To what degree this will influence the Namibian hoodia industry is not known yet, but it can be assumed that the Namibian industry could be regarded in the same situation as before.

Whatever recommendation is followed, the time frame for successfully implementing the N\$ 3 million proposal would need to be completed within 6 months from March 2010.

7 Conclusion

This report is distributed as a draft version and awaits comments, strategies, plans and vision from the hoodia industry.

- Firstly there should evolve improved commitments from the hoodia industry to incorporate poverty reduction in their objectives.
- Secondly responses are necessary the questions noted in the selected value-chain analysis should be answered and confirmed or alternatives suggested. A strategic marketing vision should be completed.

- Thirdly the request for funding the further research should be proposed with a detailed budget and explanation and costs.
- Lastly, the ‘implementing vehicle’ within Namibia to manage this process should be created.

Thereafter the final report of this draft could be tendered to the National Planning Commission for government’s review and approval, taking into consideration their continued concerns and interest in the hoodia industry.

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APPENDIX I

QUESTIONNAIRE ON HOODIA PRODUCTION AND MARKETING FOR POVERTY REDUCTION

| | | |
|---|--|--|
| 1. Region Karas Hardap | 2. District (nearest town,village) | 3a. Village Farmer 3b. Communal Farmer |
| 4a. Male 4b. Female | Start Here with survey 5. Age | 6. Latest school qualification (Grade)? |
| 7. Size in m ² of Hoodia cultivation (l x w of plot) m X m | 8. How many livestock do you own ? (number) Smallstock (sheep & goats) Cattle | 9. Do you have any employment (permanent or temporary) ? P T |
| 10. Physically challenged ? Yes No | 11. Are you the head of this household ? Yourself – (Yes) Your spouse –(No) | 12. Member of HOGGRAN ? a. Yes b. No |
| 13. How many years are you a HOGGRAN member ? yrs | 14. Do you receive any information from HOGGRAN ? Yes No | 15. Is it beneficial to be a HOGGRAN member ? Yes No |
| 16. What training did you receive to grow Hoodia? 4. Information days 5. Workshop 6. Grower's Manual | 17. How much Hoodia did you harvest last year ? kg. Dry or Wet | 18. How many Hoodia plants did you receive with the first distribution ? (Note there is also a 2 nd batch) # |
| 19. Did you have any noticeable losses in production in Hoodia plants ? How many plants died ? # | 20. What was the reason for this loss of the 1st batch ? | 21. How many Hoodia plants did you receive with the 2nd distribution ? |
| 22. How many plants have died of this 2nd batch ? # | 23. What was the reason for this loss of the 2nd batch? | 24. Do you have sufficient knowledge to cultivate Hoodia ? |
| | 26. How many visits by project management staff were done in 2009 ? | 27. How many visits by government staff (extension officers) were done in the last year (2009) ? |
| 28. If good market conditions prevail, would you plant again Hoodia on your own account ? None, Less Same More (than before) | 29. Will you be able to purchase your own inputs for Hoodia production ? | 30. Did you receive a starter pack ? |
| 31. Do you still own the complete starter pack (fencing, spade, etc)? Yes No | 32. How much N\$ did you receive for your Hoodia ? | 33. What are your expectations for the Hoodia price ? N\$kg |

| | | |
|--|--|---|
| <p>34. Did you market any Hoodia on your own ? Yes No If yes, where to ?</p> | <p>35. What were your own input costs during the project life ? Infrastructure and tools N\$ Labour N\$ or hours</p> | <p>36. Would you propagate your own seeds of Hoodia or purchase seeds to plant Hoodia?</p> |
| <p>37. Is the production of Hoodia financially more favourable than your other activities ? Yes, No Do not know.</p> | <p>38. What other income sources do you have (N\$ in 2009) ? Pension (N\$) Other GRN grants (disability, orphans, etc) Sale of livestock Employment Transfers Own business (taxi, shop, etc)</p> | <p>39. What type of problems did you encounter most during the project? Natural (drought, floods) Financial (purchasing of inputs) Technical (knowledge) Personal</p> |
| <p>40. What other economic alternatives are there in comparison to Hoodia ?</p> | <p>41. Why do you live in poverty ? 1) 2) 3) Ranked according to importance</p> | <p>42. Are there still other poor people living in your vicinity that did not join the Hoodia Project? No Yes Do not know</p> |
| <p>43. Why did these people not join ?</p> | <p>44. Why were you chosen to join this project ?</p> | <p>45. Did you ever think of joining the NNFU or other agricultural association or co-operative in your area ? Yes No</p> |
| <p>46. Number of persons in Household ?</p> <ul style="list-style-type: none"> • Adults • 11 – 20yrs • 0-10 yrs | | |

APPENDIX II

Table 1: Survey data cross tabulated according to Region.

| Region related results | Karas Region | Hardap Region |
|--|---|--|
| Age | | More older people |
| Gender | | More males |
| Schooling | | Less schooling |
| Plot size | Bigger plots (although primarily village farmers) | |
| Plant mortality | 90% less than 4 plants died | 72.5% less than 4 plants died |
| Reasons for mortality | Same for both regions | |
| Reasons for 2 nd mortality | More management problems | More natural problems |
| Insufficient knowledge | 16% | 8% |
| Were never visited by project staff | None | 8% |
| Will plant again and more | 95% | 100% |
| Able to purchase own inputs | 48% | 70% |
| Unable to purchase own inputs | 25% | 5% |
| Spend 7 hours per week in garden | 59% | 70% |
| Hoodia is more favourable | 37% | 63% |
| Problems encountered most | 66% natural, 17% financial 11% personal | 83% natural 7.5% financial |
| Economic alternatives | 28% gardening 23% livestock 37% needlework | 45% gardening 15% livestock 23% needlework |
| Main reason for poverty | Unemployment | Unemployment |
| Second reason for poverty | Unemployment | Unemployment |
| Third reason for poverty | Drug abuse | Education |
| Reason why neighbours did not apply as a beneficiary | 79% are hesitant of development projects | 65% are hesitant of development projects |

Table 2: Survey data cross tabulated according to Age and Gender.

| Age related results | Below 40 years | Pensioners |
|---|---|---|
| | 93% have some secondary schooling | 22% of pensioners have no formal schooling |
| | 93% are village farmers | 66% are village farmers |
| | | |
| Gender related results | Male | Female |
| Below 40 years | | Female dominated |
| Middle age and pensioners | Male dominated | |
| Level of schooling | No differences | No differences |
| Plot size | | Dominate on smallest and biggest plots |
| Livestock as assets | | Have less livestock, although biggest goat herd belongs to a female beneficiary |
| Employment | Are more unemployed | Take on more temporary work |
| Head of household | 78% | 62% |
| Did not attend information days and workshops | 7% | 4% |
| Mortality below 3 Hoodia plants | 78% | 89% |
| | Highest losses incurred by both genders | |
| Reason for losses | Same | Same |
| Will plant again and more | 100% | 96% |
| Expected market value of Hoodia | | 4 highest values were given by females |
| Three or less hours per week in garden | 43% | 34% |
| More than 21 hours per week in garden | 14% | 15% |
| Hoodia more favourable | Slightly higher | |
| Income from livestock | 20% | 10% |
| Income from employment | 17% | 33% |
| | 5 highest incomes are earned by females | |
| Economic alternatives | | |
| Gardening | 36% | 32% |
| Livestock | 22% | 17% |
| needlework | 22% | 47% |
| Main reason for poverty | Unemployment | Unemployment % |
| Second reason for poverty | Unemployment | Drug abuse |
| Third reason for poverty | Drug abuse | Unemployment |
| Being a member of associations | Same | Same |
| Entrepreneurial abilities | Same | Same |
| Adults in Household | Same | Same |
| Children in household | Higher | Lower |

Table 3: Survey data cross tabulated according to Smallest and XL Plots.

| Plot size | Small plots | Xlarge plots |
|--|---|---|
| Region | Karas has most | Karas has most |
| Gender | Females represent 66,7% | Females represent 50% |
| Age | | Young have none |
| | | Middle aged represent 50% Pensioners represent 50% |
| Schooling | 66.7% have some secondary schooling | 25% no formal schooling 25% some prim. schooling 25% sec. schooling |
| Livestock | Largest sheep owner of 197 head | |
| Sheep owners | 100% | 75% |
| Goat owners | 16.5% | None |
| Cattle owners | None | None |
| Permanent employment | None | None |
| Temporary work | Two beneficiaries | None |
| Unemployed | 66% | 100% |
| Persons with disabilities | None | One beneficiary |
| Hoodia plant mortality | All lost 3 or less plants | All lost 3 or less plants |
| Type of problems encountered | All natural problems and none management problems | Equal share of natural and management problems |
| Sufficient knowledge of Hoodia | 100% Yes | 50% Yes |
| Market price expectations | Have highest expectations | Have lowest expectations |
| Labour time input | Not necessarily lowest labour time input | Highest labour input |
| Hoodia more favourable | 67% negative sentiment | Less than 50% negative sentiment |
| Earnings from livestock | Only one, who has highest livestock sales | 75% no livestock earnings |
| Economic alternatives | | |
| Gardening | 33% | 50% |
| Livestock | 67% | 50% |
| Needlework (only medium and large plot owners propose it at an average of 35%) | | |
| Main reason for poverty | Jealous | Lethargic |
| Second reason for poverty | Lack of government support | Unemployment |
| Third reason for poverty | Drug abuse | Jealous |
| Reason for others not to join the project | 66% said others were hesitant | 100% said other were hesitant |
| Reason for beneficiary joining | 67% said they are entrepreneurs | 75% said they were entrepreneurs |
| Size of the plot is not significant to beneficiary being a member of any association | | |

Table 4: Survey data cross tabulated according to Type of Farmer.

| | Village Farmer | Communal Farmer |
|---|-----------------------------|--|
| Age related | | Only 1 beneficiary aged below 40 years |
| Level of schooling | No difference | No difference |
| Own no sheep | 47% | 58% |
| Owners of sheep | Own 16 of 17 largest flocks | Owner of highest number |
| Goat and cattle | Similar as above | Similar as above |
| Unemployed | 72% | 92% |
| Beneficiary head of household | 75% | 58% |
| Receive information from HOGGRAN | 5% | 27% |
| Not attending information days, workshops and not receiving Grower's manual | 11 beneficiaries | 3 beneficiaries |
| Losing no plants from first production | 46% | 35% |
| Insufficient knowledge about Hoodia | 15% | 8% |
| Plant again Hoodia more than before. | 97% | 100% |
| Hoodia more favourable | 50% Yes | 68% Yes |
| No Income from livestock | 83% | 92% |
| Biggest problem encountered with Hoodia | | |
| Natural | 73% | 88% |
| Financial | 16% | 8% |
| Technical | 1% | 0 |
| Personal | 10% | 4% |
| Economic alternative to Hoodia | | |
| Garden | 37% | 48% |
| Livestock | 26% | 17% |
| Needlework | 37% | 35% |
| Main reason for poverty | Unemployment | Unemployment |
| Second reason for poverty | Unemployment | Lack of government support |
| Third reason for poverty | Drug abuse | Education |
| Member of other association | 22% | 58% |

Table 5: Survey data cross tabulated according to why beneficiaries joined

| | Applied | Entrepreneurs |
|------------------------------|-------------------------|-------------------------|
| Region | Karas 50% Hardap 50% | Karas 61% Hardap 39% |
| Small Hoodia plot | 25% | 4% |
| XLarge plot | 0% | 3% |
| Part or full time employment | 3 beneficiaries | 20 beneficiaries |
| Physically challenged | 0 | All 12 beneficiaries |
| Insufficient knowledge | 29% | 10% |
| Problems encountered | | |
| Natural | 75% | 77% |
| Financial | 0 | 15% |
| Technical | 0 | 1% |
| Personal | 25% | 7% |
| Main reason for poverty | Unemployment | Unemployment |
| Second reason for poverty | Drug abuse | Unemployment |
| Third reason for poverty | Drug abuse | Education |
| Household sizes of all ages | Lower | Higher |