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# **Mushroom farming**

**BUSINESS PLAN,**

And additional information compiled by....

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# **The Development of of the farm for BBEE Self Sustainable Perma Culture Eco Agri- Business**

## **1. Introduction / Background**

Having investigated various possible agricultural products, it was found, that the growing and marketing of health and gourmet food, in particular gourmet mushrooms is most promising. The global market for gourmet mushrooms has increased over the last 30 years on an annually base by more then 50% and is now in money terms globally larger than the global coffee industry. In South Africa, gourmet mushrooms are still considered a very small niche market. However, most of the growth is coming from China which is producing and consuming the bulk of all gourmet mushrooms.

In the global market, the bulk of the gourmet mushrooms are sold dried and in small packaging. It is an ideal product for export. It has a shelf-life of more than 6 month. Europe and North America are our target markets. In that market the retail value of gourmet mushrooms, of which shiitake represents the bulk, is estimated to be \$ 20bil.

Organically grown, sun dried shiitake mushrooms are our specific products on which we are planning to focus on. They are the most expensive and desirable gourmet mushrooms and are representing the bulk of the overseas market. It is estimated that more then \$ 14bil of Shiitakes at retail price are sold annually. Sun dried shiitake sells in overseas on average for \$150/kg retail. We calculated our production cost for 1kg of sun-dried shiitake to be \$20/kg. Our net selling price is calculated to be \$35/kg.

The production of shiitake is very labour intensive, giving us a cost advantage. Furthermore, sun drying shiitake is very difficult to produce in Europe or in North America. Stillbaai has an ideal climate for sun-drying.

According to the USDAgri Info, the USA is importing more then 100x of all shiitake grown in the States. Almost all of it is coming from China. Upmarket health food produced in China is however a hard sell.

It is estimated, that in 2008 17.000.000 tons of mushrooms where produced worldwide, 14.000.000 tons in China alone. 7.000.000 tons of all mushrooms produced where shiitake. In South Africa, 17.000 tons of mushrooms where produced in 2008, almost all of it the inferior button mushroom and more then 60% by one company. The market for gourmet mushrooms in SA is still in its infancy. However, we are told, that substantial quantities of dried gourmet mushrooms are imported into SA from China & India.

## **2. Nature of the Business**

### **2.1 Production:**

Growing gourmet mushrooms in a mechanically controlled and automated environment utilising as bulk substrates locally produced agricultural waste products, such as wheat straw, wheat bran, sawdust, invasive tree species, and sourcing the owners and additional labour force from a poverty stricken rural community.

Our target market for dried shiitake mushrooms is Local, and in Europe and North America. The market is not dominated by large branded companies, rather by many wholesalers, distributors and agents selling to speciality shops, chains stores and to the catering industry. A large portion is sold via the internet.

It is estimated that about 200.000 tons of dried shiitake are imported annually into our target market. We are budgeting to produce about 80 tons of dried shiitake a year. The Mushroom Company will focus on production only and will not need to be concerned about marketing. We are confident, that the marketing company will be able to sell more mushrooms than the Mushroom Company will be able to produce.

The local market will be developed as well and as consumer awareness is increased, will contribute in future to our sales.

The farm, portion 29 Melkhoutkraal, has the infrastructure in place, and have already produce in the region of 10tons of organic oyster mushrooms through the process of calibrating its unique systems, designed and built by the inventor Mr Leon Potgieter. The system has been designed in order not to have any negative impact on the environment, either visual or ecological.

For the purpose of the development, a section of about 10 ha of the 198ha farm will be utilised. Growing chambers and auxiliary buildings totalling 2000m<sup>2</sup> are 90% operative. The balance of that portion will be used for storage of straw, fermenting of straw, sun-drying of mushrooms, re-cycling of waste water etc.

All future buildings will be designed utilising the latest knowledge on energy usage, such as ground sourced heating and cooling, extreme insulations, greening of roofs, using LED lighting, biological recycling of waste water and many more ecological features.

The greater part of the farm consists of “Rooikraanse”, which has proven a suitable bulk substrate for the cultivation of organic mushrooms, this invasive species is spent through a chipper, the ground is then mulched after an accelerated process of decomposition with the aid of effective micro organisms, and then planted with truffle spore inoculated saplings, with the use of “Mycrochozille systems UK, under agreement with Dr. Paul Thomas which forms part of our land re-habilitation program.

Gourmet mushrooms are not very labour intensive. A total workforce of about 20, inclusive of the owners will be required to produce and process 540tons of fresh mushrooms (oyster) or about 80tons of dried mushrooms (oyster) a year.

Shiitake is grown on artificial logs of about 10kg each. Our planned growing medium is a combination of wheat straw, maize and nutrients. The growing medium is stored and prepared in sheds, sterilised and then filled into 10 kg plastic bags together with spawn.

The bags are then stored in a temperature and humidity controlled room till spawning is completed. (About 4 to 6 weeks / shiitake). The plastic is then removed and the now solid “log” is watered and transferred into the harvesting chambers. After about 2 weeks the 1<sup>st</sup> harvest, lasting about 1 week, can be completed. Having harvested all mushrooms, the artificial log is rested for 1 week, watered again and within a further one week the 2<sup>nd</sup> harvest can be done. This is repeated a 3<sup>rd</sup> time.

The total yield for the 3 harvests should be about 90% to 120% of dry weight of the growing medium, or about 5 to 6kg for each log. A total of about 100.000 logs are required a year. At any given time, there will be about 12.000 10kg bags (logs) in the spawning chambers and about 15.000 10kg logs in the harvesting chambers. The logs are about 1.000mm high with a 300mm diameter. They are hanging on trolleys 2 high, 3 wide and 5 deep or 30 of 10kg (300kg) on each trolley.

There are a number of spawning chambers and growing chambers which are separated from each other in order not to interfere with the different conditions required at each stage of the production, and as well for hygienic reason.

The harvested mushrooms are sun dried (weather permitting) or artificially dried in a drying chamber. Sun dried shiitake are getting a premium and are regarded as the best quality. Some fresh as well as dried mushrooms will be sold to the local SA market.

### 2.3. Business & Economic Strengths

a) Quality – we are able to produce a product which will be grown according to organic standards, utilising (most of the time) natural sun-drying methods.

b) Cost of production – the cost of production to grow 1kg of fresh shiitake is shown below. The information for USA and China was provided for by Revista Mexicana Micolica. Our competitors in Europe and USA are having far greater input-cost. China can produce far cheaper than we can, however the gourmet and health food market is not in favour using Chinese food products.

Further the Chinese farmer may be able to produce very cheaply, however many middlemen between the farmer and the end consumer are wiping out that cost advantages. China is selling shiitake in bulk to Japanese processors for \$12/kg.

Production Cost in USA, China compared with Stillbaai for **1kg fresh shiitake**

	USA	China	Stillbaai
Raw Material	\$ 1.87	\$ 0.26	\$ 0.48
Labour Cost	\$ 1.32	\$ 0.24	\$ 0.53
Other Cost	\$ 3.96	\$ 0.20	\$ 0.74

Total Cost	\$ 7.15	\$ 0.70	\$ 1.75
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Total Cost of produce **1kg of dried shiitake**

	USA	China	Stillbaai
7kg of fresh shiitake	\$ 50.05	\$3.50	\$ 12.25
Packaging	\$ 1.00	\$0.50	\$ 1.00
<u>Middlemen</u>	<u>\$ 0.00</u>	<u>\$8.00</u>	<u>\$ 0.00</u>
Total Cost	\$ 51.05	\$12.00	\$13.25
Average retail S.P. in Target Market of products product in those countries			
	USA	China	Stillbaai
S.P. in Target Market	\$150.00	\$ 50.00	\$ 100.00

Note: Labour Cost in Stillbaai are calculated as if only local labour is employed and not the premium paid to the shareholders

c) “Political correct” product - The product will be 100% BBBEE and will be marketed as such. The market for gourmet mushrooms are to a large degree health shops, selling apart of the fine gourmet food aspect, the medicinal value of shiitake and other gourmet mushrooms. Their clients are mostly “green” and trying to be political correct. A further large segment is the catering industry, more interested in value for money. The USA has a large wealthy African American population, very keen to buy BBBEE product from Africa.

d) Cash-flow - The product is exported and sold against L.O.C. Raw materials are very cheap (straw and sawdust) and very little capital is required for inventory. A minimum of 10 harvests a year is providing continues cash-flow.

c) Large profit margin – We do not believe that we have to compete against the Chinese competition. Our competitors are the Japanese, Korean and local overseas producers, all having far greater costs. Our budgeted ex-farm price for processed dried shiitake is \$ 35.00/kg, or about 25% of the average retail price of a similar product. Our cost to produce 1kg is calculated to be less then \$ 20.00/kg. (At an exchange rate 8 Rand to the \$)

d) Strong market growth - The market for shiitake is still growing at more then 15% per annum. Globally, every year, the volume of shiitake and other gourmet mushrooms harvested is increasing by about 1.000.000 tons, however mostly in China and for Chinese consumption. The exports of dried shiitake are estimated to grow by about 20.000ton a year. Our total production of 80ton a year is minute in comparison.

## 2.4 The business

20.000.000 Chinese farmers are growing gourmet mushrooms, mostly shiitake. It is regarded as a low-input technology industry. However, in the West, larger and more sophisticated producers have developed a more advanced technology in connection with the growing medium, controlled growing environment; have developed better strains, and

better marketing. Their know-how is kept by them as trade secrets. Information on latest development and general know-how is provided for by various research institutes.

### 2.5 Overall nature of the business

Growing gourmet mushrooms. Dried shiitake are packaged like a branded product, and then sold to pharmacies and to food stores alike. It is as well a “green” market product, sold at farmers markets. The catering industry is buying that product in bulk.

- Organically grown, sun dried, from Africa, unpolluted and affordable.
- Our strategic partner will be the marketing company
- 30 school-leavers with good matric results and not be able to find employment in a poor rural community are the main beneficiary. Further 30 full time jobs are being created. The project will give hope to a community, by “Yes we can”

## 3. Funding Requirement (Optional)

- We require the funds to start up the above described mushroom business
- The NEF loan will provide bridging finance till the DLA grants (LRAD Program) is available.

Note: The Mushroom Company will sell all its profit sharing shares to 30 BBBEE candidates for R 500.000.00 each. (Total R 15.mil) The selling price will be a loan to the candidates. The candidates are then fulfilling the requirement by the Department of Land Affairs for the maximum grant allocations, as per LRAD of R 431.000.00 each. A total of R 12.9mil will be made available to each candidate after approval. Approval is expected to be in April 2010. Payout of the funds is expected to be in Sep. 2010. The grant of each candidate will be equity in the company.

### Ordinary Shares

30 shareholders

Equity of each shareholder after receiving of grant R431.000

Total	R 12.900.000
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Long Term Loan NEF	R 15.000.000
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<b>Total investment</b>	<b>R 27.900.000</b>
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### Uses of Funds

<b>Total Assets</b>	<b>R 14.300.000</b>
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<b>Fixed Assets</b>	<b>R 13.000.000</b>
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<b>Current Assets</b>	<b>R 1.300.000</b>
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## 4. Industry Analysis

- What are the major economic, technological, legal, and political trends on a national and international level?

20mil Chinese farmers are producing the bulk of all globally grown gourmet mushrooms at very low costs. As an Agri-product, gourmet mushrooms are not older than 30 years. On an industrial scale, gourmet mushrooms are only now emerging as an industry. Every larger producer is developing his own technique and the know-how is guarded. Larger producers are being established in our target market as well as in China. In the West, the Nederland is leading the way.

- **What is the broader industry in which your business will participate**

In SA, the industry as such, does with the exception of one small operator, not exist. Internationally, mushroom farming and processing is being industrialised, however gourmet mushrooms have their limitation, as they are very labour intensive.

- **Who are the major players in each sector?**

In SA, Danone is controlling the button mushroom industry. Gourmet mushrooms are very difficult to be grown on the same industrial scale. Button mushrooms and gourmet mushrooms are not really competing.

- **Discuss the nature of the industry**

Gourmet mushrooms are a very much a specialised field. In overseas, many so called “green” farmers are producing gourmet mushrooms and selling them dried and processed to health shops or fresh at farmers markets. Only recently, in the Netherlands, commercial production facilities have been established. In the USA there are now also a number of larger producer. The product is very labour intensive.

Apart of the fresh mushrooms sold by the “green” farmers, almost all of the gourmet mushroom are processed and sold dried, imported mostly from China, via wholesalers in Japan, repackaged and sold on by distributor to the market they are operating in. The low price paid to the Chinese farmer is then doubled and tripled by the wholesalers and distributors.

- **Define and segment the customer base within the industry**

Shiitake mushrooms have broadly speaking two distinguished customer bases

- a) Gourmet industry, such as up-market restaurants, delis. Consumer will purchase the mushroom either fresh from local sources or in most cases, dried to be used for gourmet cooking.
- b) Health shops, delis, up-market retail chains and internet purchasers. Those customers are purchasing shiitake for its gourmet and medicinal value, dried to be used in cooking, powdered or in tablets to be used as supplement for health benefits.

The bulk of our potential customers are in Europe, North America and possible in Japan.

No information is available on the size of the different segments.

The market has been growing over the last 30 years by more than 50% per year. It is estimated, that the market is still growing by more than 15% per year.

Our niche in that \$20bil market will be for processed shiitake grown according to organic standards, sun-dried and produced in an unpolluted growing environment. The industry is very much segmented. No individual player can be identified. If it would be not for the size of the overall market, one could call it a cottage industry.

- **If you were to sell every possible customer in your target market – how much would that add up to?**

The present size of our target market is estimated to be \$20bil, growing every year by another \$3bil.

- **Describe and support the need and demand for your product**

Most of the present gourmet mushrooms are imported from China and have been grown under questionable hygienic conditions. Our product will only be marginal more expensive than these imports from China. They are exported in bulk and then processed in Japan, mostly for re-export. Selling Chinese gourmet and health food to upmarket consumer is very difficult. There is a need for quality controlled gourmet mushrooms at an affordable price.

- **What is the size of the industry in terms of sales/demand**

As described above, the industry and demand is huge.

- **What is the success rate**

To our knowledge, none of the larger producer in our target market has folded.

- **What is the industry growth rate**

The growing of gourmet mushrooms between the year 1986 and 1997 has increased 22 fold. It is expected that the industry will keep on growing as consumption of gourmet mushrooms is increasing.

- **What have been the trends in the industry**

The industry, particular in our target market has shifted from small scale and side-line producers to dedicated larger commercialised producers. That trend is very much visible in our target market.

- **Give ownership profile of the existing major players in the industry**

At production level, the bulk of mushrooms are produced by 20 mil Chinese farmers. Some of the Japanese processors and distributors of Asian food have established distribution channels for those Chinese mushrooms in our target market.

- **List factors trends in the market that are providing opportunities**

The trend is to move away from Chinese produced gourmet mushrooms and produce them under controlled and hygienic environment. Further more, we are able to natural sun-dry the mushrooms.

## 5. Product/Services and Unique Selling Propositions

### 5.1. Product

- **What is the unique selling point about the product or service**

Grown under strict environmental conditions, using unpolluted growing mediums, natural sun-dried, “politically correct”.

- **Describe the features of the product**

As above

- **What need does it satisfy in the market**

The market does not offer gourmet mushrooms grown under strict controlled conditions at a competitive price.

- **If there are differed kinds products offered by the company**

Shiitake and any many other types of gourmet mushroom are suitable for the production facilities

- **Describe how your product is differentiated from competition**

The bulk of the Chinese products are not grown in controlled environment. European and American products are grown under such conditions, however through the higher input cost, very expensive to produce.

- **Discuss the cost and average selling price of the product**

We analysed the cost in the financial working papers. The cost to produce 1kg of shiitake is budgeted at less then R 20.00. It takes 7 kg of fresh shiitake to produce 1 kg of dried shiitake. Production cost therefore is R 140/kg for sun-dried shiitake. At 8.00 Rand to the \$ that is less then \$ 20.00/kg. We are budgeting to sell ex farm sun-dried shiitake at \$35.00/kg. (Average retail price at the target market for quality products is \$150.00/kg)

### 5.2 Technology

- **Describe the technology used in manufacturing the product**

Shiitake is a wood mushroom and will convert cellulose based materials into mushrooms. We are using wheat straw as our main growing medium. This together with supplements is the raw materials for our production.

That material is pasteurised and filled into plastic bags together with spawn.

The spawn will invade all of the raw materials and after about 4 to 6 weeks will convert the growing medium into mushrooms. A total of 3 harvests are the norm, before the growing medium is exhausted and used up. That total process takes about 3 to 4 month.

A smaller portion of the harvested mushrooms will be sold fresh in the SA market; the bulk will be dried and processed and then packaged into 50gram, or larger containers.

- **Is the technology new or is it an improvement over existing technology.**

That technology is not new. It was developed about 30 years ago by Japanese growers. Before that, shiitake and other gourmet mushrooms were harvested wild in the Asian forests.

- **List the technology risk**

Growing and processing gourmet mushrooms is a low in-put technology. Very little risk is involved. The technology will be transferred by ARC and other consultants. However, there will be a period of trial and error, till we have fine tuned the ideal combinations of the growing mediums, supplements and climatic growing conditions.

- **Compare the company technology**

Research institutions are very forthcoming with information related to the growing of gourmet mushrooms. As mentioned above, we have to find our own ideal conditions. Larger growers are keeping their developed ideal conditions as secretes. Very little is known on those ideal conditions by other commercial growers.

- **Validate the technology and prove that it works**

20 mil Chinese farmers are growing shiitake and other mushrooms successfully. We have access to the latest research findings how to farm mushrooms commercially on a larger scale. We have the advantage over those Chinese farmers, that we are able to grow them under very strictly controlled climatic and hygienic conditions, which is not available to those farmers.

- **Discussion of the intellectual properties**

There are no patents or any other intellectual properties for growing mushrooms. However as mentioned above, we need to develop our own formula for the ideal mixture of the growing medium and the supplements as well as climatic conditions.

## 6. Product Development

- **Describe all major product categories currently being developed**

Together wit ARC or any other researchers we will develop from an existing base of commercial available strains the ideal strains of shiitake for our growing conditions. Strains to vary largely and do react differently to different growing conditions. This will be an ongoing process.

- **Describe the product development plan**

Our main product is shiitake and possible a range of other gourmet mushrooms. However, we will develop a range of value added product, such as shiitake in powdered form, as tablets, as gourmet paste.

- **Provide a timeline for each stage of product development**

We are budgeting that by the end of the first year we will have fine tuned the perfect combination of growing mediums and climatic conditions. By the end of that year we will be in full production. Not all mushrooms harvested are of ideal size and form. Those mushrooms will be dried and converted either to tablets, paste or powder. The development of those added on products will be done in the first year of production.

- **List the critical elements and risk factors at each stage of product development**

It is important to have the support of a research institute such as ARC to develop from existing commercial available strains, the perfect strain for our purpose. Value added products are less scientific to develop. For paste we will find a gourmet chef to develop us the right product, for the product development of tablets and powder we will contract it to a research institute.

- **Identify any problem areas and concerns that could delay or prevent the launch of the product line**

Marketing is the critical factor for our product. We do know that the market exists, however we have to become part of it.

It is our intention, that the marketing company will be established as soon as we have the funding for the project. That company has to establish a distributor network in our target market before we start with the full production.

- **Describe how much has been accomplished to date**

In order to start our project, which is to establish a future for unemployed matriculated school leavers in the rural area of Stillbaai we had to find

- a) A business concept ideally suited for that purpose. After much research we established that growing and processing gourmet mushrooms is ideal for that purpose.
- b) We researched that industry in relation to markets, production, cost of production
- c) We prepared a design for a production facility in order to firm up on capital requirements and cost of production.
- d) We established the cost of developing the farm Melkhoutkraal (portion 29) for the same purpose
- e) We have produced in excess of 5 tons of gourmet Oyster mushrooms.
- f) We have distributed large volumes of samples to various retailers and restaurants in the Cape Province.

- **List the remaining critical steps in the initial phase of the development**

Having done the above, we now have to secure the funding in order to move forward with our project.

Having secured the funding we will

- a) firm up with marketing consultants and establish together with them the target market and products
- b) interview the key personnel that is firstly a General Manager with possible horticultural knowledge
- c) enter into a contract with a research institute such as ARC to advise us in the final construction plan of the production facility, developing the ideal growing medium and mushroom strains. (Ref: Batforum)
- d) establish a training program for the future shareholders.
- e) complete the construction plan and order all required machinery and fittings
- f) complete the balance of the facilities that have been constructed to-date.

- **Identify similar efforts being pursued to produce similar products**

There are a number of similar production facilities built in the Nederland, Poland and in the USA. We will endeavour through suppliers of equipments to find out more about it. <http://www.gcsmartpro.com/>

## 7. Manufacturing and Production

- **Discussion of the production process.**

We will attach the design drawings prepared by our architect

- **Describe the steps, machinery, labour and raw material involves**

- a) **Raw material** (straw) is purchased from local farmers stored and chopped up into small pieces. Those pieces together with the other supplements are mixed in a cement mixer, filled into 10kg special designed and imported plastic bags and then sterilised.

Raw material, as presently planned, will consist of 80% wheat straw, 10% maize, 5% calcium, 1.5% sucrose, 1.5% CaCO<sub>3</sub>, 0.5% CaSO<sub>4</sub>, 0.5% Citric Acid, plus small amount of Water Super Absorbent and spawn.

Machinery required: Forklift, pasteurising chamber, scale, cement mixer, plastic bag dispenser, trolleys for storage, chopping machine

Labour: driving the forklift, chopping the straw, moving bags of supplements. Filling bags, moving filled bags.

- b) **Shiitake spawn** will be initially purchased by commercial producers. In consultation with ARC or a similar institute we will improve on those strains to suit our growing environment. 1kg plastic bags of maize corn are inoculated with mother spawn and after about 3 to 4 weeks the maize is fully inoculated.

Machinery: Laboratory equipments, sterilised rooms, scale

Labour: laboratory assistants, labour to move corn and fill into 1 kg bags under sterile conditions.

- c) **Inoculation of growing medium (raw material).** The pasteurised 10kg plastic bags (artificial logs) filled with the growing medium are mixed with the 1 kg inoculated corn and stored on trolleys (30 bags/one trolley) for about 4 to 6 weeks in climate controlled spawning chambers. After that period, the logs are fully inoculated. The plastic is removed and the now firm logs wetted with water and are moved into the harvesting chambers.

Machinery required: scale, large amount of trolleys for storage

Labour: To mix bags with spawn, place them on trolleys and move trolleys.

- d) **Harvesting** The logs are hung from a frame for easy reach. The harvesting chamber is kept at 95% humidity by a misting system. After about 2 weeks the first mushrooms appear and can be harvested. The harvesting period is about a further week. After the last mushroom has been harvested, the logs are soaked in water for a few hours and then hung up again in the harvesting chambers. After about 1 week the 2<sup>nd</sup> harvest will begin. That process is repeated again for a 3<sup>rd</sup> time.

Machinery: Drying chamber (to be used only in winter when natural drying is not possible)

Labour: Very labour intensive. Harvesting and shifting logs, watering them and replacing them on storage trolleys. Moving harvested mushrooms and cleaning them and prepare them for either packing as fresh mushrooms or sun-drying, attending to sun-drying.

- e) **Packing and Transporting** Dried shiitake are sold in 50gram, 100gram containers for the retail market and in 500gram up to 5.000gram container for hospitality industry. Paste and tablets are packed in containers.

Transport vehicles and packing machinery

A total workforce of 60, including the 30 shareholders is required to produce about 80 ton of dried shiitake a year.

- **Does production require new equipment and process technology**

All production equipment needs to be purchased new. The technology involved is regarded as a low in-put technology.

- **Describe the availability of key materials and key suppliers**

The main material used is wheat straw, an agricultural waste product and readily available. Wheat straw can be stored for years. It is of advantage to use straw already weathered.

All other materials are also readily available.

- **Which is the raw material in least supply**

Does not apply

- **Identify key elements of the manufacturing process that will be internal or outsourced**

All manufacturing processes will be internal. However the marketing will be outsourced

- **Describe critical skills**

**Critical skill** will be the management of 30 individual owners. Technically, growing gourmet mushroom is regarded as low in-put technology. Critical skill will be the research into finding the perfect growing medium and the ideal strain. That skill will be outsourced to the ARC or to similar consultants.

**Lead time** for the first harvest is about 3 month after opening of production facilities. Thereafter continuous harvest is scheduled.

**Major capital items** is the structure of the building, the installation of the climate control equipments, the provision of energy, the sterilisation chambers, storage trolleys; shelving and transport vehicles.

## 8. Target Market – who is your customer

- **Who is your customer**

As described above, the overseas consumer of health products, the gourmet industry internationally as well as nationally.

Private consumer can be more interested in the medicinal value of shiitake, or more interested in the gourmet aspects or both of it. Hospitality industry will be only interested into the gourmet aspect of the shiitake.

- **What are the characteristics of your customer?**

The end-consumer in Europe will be from the A+ income group and interested in healthy living, good food or both. A segment of that market will choose a product which is “politically correct”. A further segment will be pleased to know, that the product was not grown in China.

In America, again the income group will be A+. A section will buy it knowing that it was produced in Africa under unpolluted natural conditions.

In both areas, shiitake is sold to a broad regional spectrum. No particular region is dominant.

- **What need the product is intended to satisfy**

Gourmet food combined with medicinal values

- **How is the need being addressed presently**

\$20bil of that product is sold annually in our target market. That speaks for itself.

- **How big is the market**

It is estimated, that in 2008, 7.000.000 tons of fresh shiitake were produced, the bulk in China. That 7mil tons of fresh shiitake will produce 1mil ton of dried shiitake. China is exporting dried shiitake in bulk for \$12/kg to Japan. Even at that low price, it is still \$ 12bil. It is estimated that 200.000tons of dried shiitake are exported into our target market. The retail value, assuming an average of \$100/kg is \$20bil.

- **How much is it going to cost to acquire and retain them?**

We are budgeting to pay to the independent marketing company 15% of gross sale (see our detailed financial papers) in money terms about R 4mil per year.

- **What is the business targeted market share**

Our targeted market share is minute. Assuming we sell all our shiitake in overseas then our planned production of about 80tons of dried shiitake will represent 0.04% of the present market.

- **How does the business fit into the market?**

We are perfectly suited to fill a gap in the market that is to produce at much lower cost than in Europe or America, top quality, unpolluted natural dried shiitake and “politically correct”.

- **Provide analysis on your pricing strategy and contrast it with your competition**

The Annexure on market give a more detailed break-down on retail pricing by speciality stores, internet business, farms, producer markets and many more. Broadly speaking, we produce 1kg dried shiitake for \$ 20.00, budgeting to sell it for \$ 35.00. The overseas retail prices are between \$ 60.00 and \$ 350.00/kg. Chinese products are sold in the lower portion, locally and Japanese produced shiitake are sold in the upper half of the price spectrum.

## **9. Competition & Competitive Analyses**

- **Who are your direct competitors**

The only direct competitor in South Africa is a producer near Hermanus, selling to retailers such as Woolworth’s and local delis and restaurants. He is now one year in business. His pricing is orientated on the overseas market. He is advised by Dutch consultants. We do understand that he is expanding his operation. His system of producing and marketing gourmet mushrooms is fully influenced by his consultant. His growing medium and his spawn are imported from the Nederland.

We understand that he is selling 1kg fresh shiitake for about R 100.00. He is not exporting as yet, as his full production is taken up by the local market. His present production is about 200 ton of fresh shiitake. His revenue at a selling price of R100/kg for 200.000kg is about Rand 20mil. Our budgeted Revenue is just over R 22 mil for 540.000kg at R 40/kg. (Net of marketing expenses)

The competitors in our overseas target market are many thousands of small producers, some hundred larger commercialised growers and the 20 mil Chinese farmers. No particular producer has any influence on the market. We understand that the present production is not satisfying the present demand.

- **Highlight the key difference between you and your competitors in terms of Product:** Very difficult to be specific, as many producers are producing the same quality we are aiming for, however at much higher prices.

## **Competitive Matrix**

Please see attachment

- **Describe key, sustainable competitive advantages/barriers to entry, If possible your product advantage that can not be replicated.**

As described above, thousands of producers can be seen as competitors. However, we believe that out of those thousand producers we will be one of the few producing a “politically correct” product coming out of Africa.

- **List and describe indirect competitors and substitute produce.**

We do not believe, that there is a substitute produce for gourmet mushrooms.

- **Discuss level of competition within the industry and show where you business fits in the bigger picture**

The industry is dominated by marketing companies rather than by producers. There are much fewer marketing companies than producers. Many of the producers are selling to larger wholesalers, which are preparing the product for the consumer. Some of the producers did manage to establish their own customer base; however they do not influence the market as such.

The establishment of an independent market company with the sole aim to market gourmet mushrooms and added value products is important.

- **Discuss any action your competitors are taking to stay ahead in the market place**

The competition is so fragmented, that it is impossible to be specific. We do however believe that apart of setting up a distribution network in our target market, internet marketing could be very successful.

- **Who are your competitors key strategic partners**

The market is so fragmented, that this question is difficult to answer. Looking at the 20 mil Chinese farmers, producing the bulk of all shiitake, then we can identify the Japanese importers and distributors as their key strategic partners.

The Chinese farmers however do not sell directly to the importer, rather to local agents acting on behalf of Chinese exporter, who in turn are selling to Japanese importer, who is processing the product and then selling it on to his overseas distributors.

- **Identify which competitor will be most affected by your company's success?**

The only company negatively affected will be the local producer in Hermanus. However, we believe, that the market in SA will develop rapidly and that there will be place for many more producers.

- **What existing product will your product replace**

Gourmet mushroom are new in SA. The market for mushrooms is still underdeveloped. We do not believe that we will replace any of the existing products.

- **Highlight additional competitive strengths of your business**

Product: We highlighted our competitive strength before. We believe, that we will be one of the few producers of shiitake able to offer processed sun-dried, unpolluted, after organically principles grown gourmet mushrooms.

Positioning in the market: Up-market, top quality, appealing to health conscious and politically concerned consumers.

Capabilities: Producing at very competitive prices, top quality products.

Strategy: Marketing with a story

- **How or why is your product an improvement over existing products?**

There are millions of producer producing gourmet mushrooms. Most of them are produced under questionable conditions. There are however a few top-quality producers. It will be a challenge to improve on them. We will take up the challenge.

## 10. Marketing Plan

- **Description of the overall marketing strategy and describe your marketing and sales organisation**

The structure of the **Mushroom Company** is designed for production and not for marketing. With this in mind, we will establish a **Marketing Company**, focusing on marketing gourmet mushrooms and related value added products.

We believe that with a proper marketing strategy the marketing company will produce more sales than the mushroom company has budgeted for.

Having identified the overseas market as target we need to focus on the penetration of that market.

- a) Branding the product
- b) Setting up a network of distributors/agents in the target market
- c) Exploring the possibility of establishing internet sales
- d) Supporting the internet sales as well as the distributors with a local based call centre.

- **In terms of your target market, describe who makes buying decisions? What do they value?**

Shiitake is either sold to consumers at small 50gram containers or in bulk to restaurants and hotels.

Consumers will value that the gourmet food was product clean, hygienic and has all the other values required from an up-market product.

The commercial user will have similar values; however the medicinal value will be of little importance to him. Competitive pricing will be more important.

- **If this is a new business, what market share do you expect?**

The planned producing is minute in relation to the overall market. None of the competitors is having a recognisable market share.

- **Discuss how and when you will reach your customer, through advertising, promotion, point of sales and distribution?**

The market is huge and fragmented. Our planned market share is minute. Any form of broad advertising will be lost. Promotion, point of sale and establishing a dealer net work will be more our aim. Direct selling through internet and supported by a call-centre need to be considered. We will work closely with a PR agency. It should be possible to have an international exposure in the media as we have a positive story to tell.

- **Do you sell directly to customers or through partners?**

The strategy of selling through overseas and local distribution partners for ease of delivery will be advisable, even by using internet selling and possible call-centre marketing.

- **Discuss your brand and how it will be developed**

We are in the process of making contact with various marketing consultants.

Having decided one which on we will work together, that marketing consultant will then assist us in developing a marketing strategy and a brand for our product.

## 11. Management Team

- **Give background on parties/management involved. Discuss their equity interest, compensation and roles in the organisation going forward.**

The ownership and shareholding of the Mushroom Company is 100% in the hand of school-leavers without any managerial experience. The trustees will take on the role of curators and will keep voting control firmly in the hand of the Trust, till the trustees are convinced that out of the shareholders a management team has evolved. It is the intention to encourage some of the shareholders to further their studies in business management and related subjects.

Till such time, a professional management team will be employed by the trustees, in particular a strong General Manager, with experience in management and possible in horticulture. He will be assisted by an Assistant Manager, by an Administration Manager and a Maintenance Manager.

The Mushroom Company will focus on the production of mushrooms only. Marketing will be done by the Marketing Company, not directly connected to the Mushroom Company.

The shareholders will be working in the Mushroom Company, assisted by a permanent workforce. As soon as the Mushroom Company is profitable and able to pay dividends, we will encourage those shareholders with academic potential, to further their education, paid out of dividends.

- **Indicate the equity percentage held by each member of the management team.**

The management team will not have any interest in the Mushroom Company; however it is the intention, to offer the management team a large share in the Marketing Company.

- **Indicate the post-funding shareholder percentage held by employees.**

The school-leavers will have 100% of the shares in the Mushroom Company. They are at the same time employees of the company.

- **Describe the relevant track record, back-ground, experience and expertise of the management team.**

The management team will be hired based on the required experience and expertise.

- **Identify weakness in management, positions that need to be filled and how/when you will secure the right people**

Presently, the total management structure has to be filled. As soon as we have the funding in place we will start interviewing a General Manager. Closer to opening the production facilities, we will secure the service of the other required managers.

- **Describe the number of black people who will be at the management level of the company.**

Ultimately, the management will be developed out of the shareholders and will be 90% black. Till that time, we will employ managers based on merit, however having the choice, we will favour black managers.

- **Give background on parties/management involved**

- **Do they have the necessary experience of the industry?**

The managers will be selected based on their experience in similar industries. Growing gourmet mushrooms is a new industry. However we do believe that the technical aspect, being a low in-put technology industry, is not so important, important are general management skills.

- **Do they have the technical skills required to run this type of business.**

The General Manager as well as his assistant will need to have experience in the commercial and technical aspects of agriculture. We will select that management team based on that.

- **Who are the technical partners and what will be their role in the operation of the business?**

The technical partners will be research institutes and consultants in order to assist us in fine-tuning the growing medium and climatic conditions.

## 12. Empowerment

- **Indicate the level of BEE ownership**

The company will be 100% BEE

- **What is their operational role in the business?**

At start up, the shareholders will be involved in the production process only. At regular meetings, they will be informed of progress and future planning. We will as soon as possible identify suitable candidates amongst them to be trained through higher education to acquire the managerial skills required to manage the company independently from outside hired management.

- **What value are they bringing into the entity?**

Candidates will be selected from a large pool of young people.

We will experience failures and disappointments. We are protecting the company as a unit, by giving the Trust the right to re-purchase the share of a candidate, not performing as expected. That share then will be sold on to a new candidate, possible from the non-shareholder workforce. That workforce will be large selected from other school-leavers with matriculation.

- **Please fill in the table showing shareholdings**

A list of all shareholders with their details is attached (in the Power Point file).

- **Participation by BEE**

See above list

### 13. Growth Strategy

- **Taking into consideration operation, manufacturing, suppliers, personnel and management – what is needed for growth and what challenges will you face in order to reach you revenue goals**

In order to reach our revenue goals, the Marketing Company has to fulfil its role and provide the sales. We will make sure, that before opening of the production facilities the Marketing Company has already establish a distribution network.

Our budget is providing us with a 12 month window to establish full production.

In that period, we will have fine-tuned the technical aspects of the growing conditions and formulas in order to achieve the budget yield.

As it is a very new industry, we could find for instants, that the growing chambers are to small or that the production flow is not optimal or structural changes to the buildings will improve the production.

The yield of harvested mushrooms is one component of the revenue goals; the other is the achieved selling price. We believe that we have very conservatively estimated the selling price. A higher selling price will compensate for a possible lower yield.

On the question of yield, we have been guided by research documents. On the question of lay-out and structure of the building by examples of similar structures made available on the internet.

We allowed substantial more space as recommended, however it is a new industry and we had to work with little guidance.

- **In broad terms describe your strategy for sustaining high growth rates.**

The aim of the Trust is to spread the benefit of that business concept as broadly as possible. One of the reasons that we believe that marketing need to be independent form production is that an expanding market should benefit other candidates.

We will aim to maximise the planned buildings and the management structure for the benefit of the 30 shareholders in that business. Should, as we expect, sales exceed to maximum production capabilities of the company, the Trust would like to establish further sections with new shareholders.

- **Discuss unit volume growth and the aspect of the business that must be in place to accommodate such growth**

See above

- **To whom will be the first order be made and what is the expected volume**

That is presently a difficult question to answer.

- **Identify the risk factors that may prevent you from reaching your goals or worse case, cause the business to fail**

The market will not be the reason. Not having initial funding will prevent the business of getting established. Gross profit and cash-flow are very healthy and will not be a reason. Not achieving the yield could be a problem; however that can be solved by trying different growing mediums and conditions. The time required to correct that is counted in months and not in years.

## 14. Milestone Analysis

- **Identify all the mayor and minor milestones for the next 3 month, 6 month, 1- year and 3 years.**

### 3 month

- a) Raise the project funding
- b) Identify the marketing consultants to assist
- c) Establish suppliers of equipments and machineries
- d) Firm up on design drawings for the production facilities
- e) Firm up with research institute on the technical aspects

### 6 months

- a) Bring the General Manger of the company on board
- b) Start with construction
- c) Send shareholders to a training course
- d) Order all equipment and machineries
- e) Establish the Marketing Company
- f) Appoint the General Manager of the Marketing Company
- g) Finalise with research institute on the technical aspects

### 1-year

- a) Start of production
- b) Marketing fully established

- c) Identify candidates to be trained for managers
- d) Fine-tune all technical aspects
- e) End of the 1<sup>st</sup> year, the company to be in full production

### 3-year

- a) Bring the future black managers/shareholders on board
- b) Send academic inclined shareholders to further their education
- c) Pay out dividends and encourage it to be used for a housing

- **Identify the key R&D, Technology, Prototyping, Production, Marketing, Revenue, Profitability and Management milestones that must be met over the growth of the company**

- a) **R&D** As pointed out before, gourmet mushrooms are grown on various mediums and various conditions. Almost every researcher is proposing different growing mediums and conditions. With the help of researchers we will establish the, for our needs ideal combinations. This will be an ongoing process.
- b) **Technology** The industry is a low in-put technology; however various recent developments are greatly improving the yield and quality. Most of the improvements are related to research findings such as electrical impulses improving the yield and shortening the harvesting period, and the use of Super Water Absorbent increasing the yield as well by an average of 30%. We will follow closely all those developments and will experiment with any new technology we think will be useful to us.
- c) **Prototyping** There are hundreds of various strains available. Research will assist us in developing the ideal strain for our needs. Before start of production, we will have established the type of strain we think is suited for us. Within the first year of production, that process will be fine-tuned and completed.
- d) **Production** The commercialisation of gourmet mushroom growing has greatly influenced the production process. Dutch companies are leading the way by introducing more efficient ways of production, such as increasing the size of the artificial logs from 1 to 2kg only a few years ago to 10 to 16kg logs. Better and easier storage and harvesting facilities have been developed by commercial producers. Our design for the production facilities will closely follow the most successful methods.
- e) **Marketing** Gourmet mushrooms are sold by many producers and wholesalers to retailers, commercial users by way of distribution networks and to the end-user via internet. There is no branded product in the market and very little advertising is being done. We will be following a similar route.
- f) **Revenue** Our aim is to achieve full budgeted monthly revenue by end of 1<sup>st</sup> year of production.
- g) **Profitability** Most of the Costs of Production are fixed. Raw material is only a minute component. Therefore it is important to achieve the

budgeted yield, about 90% of Biological Efficiency. (see attachment)  
 A 10% drop will reduce the quantity of mushrooms harvested by 10%,  
 an increase of 10% will increase the volume harvested by 10%. We are  
 aiming to achieve the budgeted B.E. by end of the 1<sup>st</sup> year of  
 production. The other crucial factor is the selling price. We have  
 budgeted a selling price of gross R 50/kg (net R40/kg) for fresh  
 shiitake.

- h) **Management** The initial management team will be selected on merit,  
 with emphasis on black managers. It is our aim to have that team  
 replaced within 3 years by developing a management team from the  
 shareholders. In order to keep the initial management team motivated,  
 they will be offered a share in the Marketing Company and the  
 prospect of opening further Mushroom Companies as the market for  
 the product expands.

- **List the priority milestones to be accomplished with the funds from the current round of funding**

All the above priority milestones are depending on the funds available..

## 15 Strategic Partners

- **List all key suppliers and vendors for the business**

There is no key supplier as all materials are readily available. The Marketing Company is the only strategic partner.

- **List all professional services firms involved in the business.**

**Legal:**

**Accounting:**

**Architects:**

**Engineers:**

**Business Planning:**

### **Financial Analyses**

Please see attached Power Point File

## **ANNEXURE**

- 1. A Guide to Mushrooms**
- 2. The Product – Gourmet Mushrooms**
- 3. The Market for Gourmet Mushrooms**
- 4. The Shiitake Mushrooms**
- 5. Health Benefits**
- 6. Farming of Gourmet Mushrooms**
- 7. Choice of Substrate**
- 8. Marketing**
- 9. List of Candidates**
- 10. Proposed Design for the Production Facilities**

# 1. A Guide to Mushrooms

## Standard Mushrooms

### White Button Mushrooms

White Button Mushrooms make up almost 90% of all mushrooms harvested in SA. This mushroom is produced in large “mushroom factories”.

### Cremini

Brown version of the Button Mushroom

Together with **Portobello**, the larger version of **Cremini** and the above **White Button Mushrooms** constitute almost all of the harvested mushrooms in South Africa.

These Mushrooms are ideal for industrialised production and for branded consumer goods. The market is monopolised by one large company. Wholesale price of button mushrooms in SA are about Rand 25 to 30/kg.

## Gourmet Mushrooms

Gourmet Mushrooms are not suited for large scale production and are very labour intensive. Almost all of the Gourmet Mushrooms are produced in Asia with the exception of Japan and South Korea as a by-product on small family farms, however in the western countries more and more by specialised growers. There are a total of 20 mil farmers in China growing gourmet mushrooms.

### Shiitake

Intensively flavourful, this gourmet mushroom is the most popular gourmet variety. It is the most grown mushroom in China and through that, the most grown mushroom world-wide. Originally harvested wild in Asian forest, later Asian farmers raised this mushrooms on freshly cut hardwood logs. In the West it is grown on specialised farms in a controlled environment in plastic bags filled with a mixture of sawdust, straw and minerals and in China as a by-product on family farms in none-controlled environment, utilising the same technique of artificial logs and utilising agricultural waste products as growing mediums. In China, fresh mushrooms are sold on the local markets, however the bulk of shiitake is sold dried to wholesalers; where else in the West a large portion of the shiitake is sold fresh either at producer markets or the hospitality industry and speciality shops and upmarket retailers.

### Enokitake

These long-stemmed mushrooms are raised on substrates in a similar fashion as Shiitake. Their delicate flavour makes them ideal for supps, salads and other recipes.

**Maitake**

Maitake mushrooms are growing in popularity not only for flavour, but also for their medicinal properties. The mushroom is grown similar to Shiitake. In Asia, powdered Maitake is used in teas, tablets and drinks.

**Oyster Mushroom**

Oyster Mushrooms are easy to grow, very similar to shiitake. Regarded as a beginners mushroom.

## 2. The Product – Gourmet Mushrooms

The gourmet mushroom which we believe has the greatest potential is shiitake.

However most of the other variety of gourmet mushrooms can be grown in the same growing facilities.

The following points are in its favour:

- Regarded as one of the finest gourmet mushrooms
- Relatively easy to grow
- Quick growing cycle. More than 10 harvests a year
- Grown in controlled environment – buildings relatively small in relation to output
- Ideal “green” agricultural product – converts almost 100% of a range of agricultural waste products, such as sawdust, straw, grape stalks, cobs e.g. into gourmet food.
- Less capital intensive than standard white button mushrooms
- Easy to process and to increase substantially the sales value
- Many possibilities for added-on value products
- Excellent cash-flow and low financial risk
- More labour intensive – creating permanent employment
- Assuring good income to the emerging farmers
- A low input technology
- Ideal product for securing food availability in South Africa
- Dramatic increase on overall market share and demand worldwide
- Much higher selling price than standard mushrooms
- Good source of proteins (about 22% of dry weight - or almost as much as meat)
- Medicinal value
- Huge export potential for processed products, particularly if sun-dried and organic.

- Low production cost – about R 20.00/kg for fresh and R 200.00/kg for packaged dried shiitake
- Fresh shiitake have a 50% longer shelf life than button mushrooms
- Dried shiitake can be stored for many month

### **3. The Market for Gourmet Mushrooms**

#### **The South African Market for Mushrooms**

South Africa is presently producing 17.000 ton of mushrooms a year.

To compare: total worldwide production is estimated at 17.000.000 tons or 1000 x of SA production

The South African market is dominated by one producer (Denny, with a market share of 60%, producing mushrooms in an industrial scale from 3 production facilities (Johannesburg, Durban and Port Elisabeth)

Two further producers sharing another 30% of the market. There are a further 12 produces responsible for the balance.

The retail value of these mushrooms is estimated to be close to R 1bil.

None of the larger producers are growing gourmet mushrooms. Gourmet mushrooms are labour intensive and are not suitable for industrial production methods.

The per-head consumption in South Africa is less then 0.35kg per year. In comparison in the USA and in Europe it is about 1.5 kg or 4x the SA consumption. Estimation for China is a present consumption of about 10kg/head.

#### **The International Market**

In 2004 the Mexican Government, in search for a low technology alternative product for their rural poor, funded a study on gourmet mushrooms, and in particular on shiitake. According to that study, world production of cultivated mushrooms was 365.000 ton in 1965. World production reached 2.282.000 ton in 1986. The data shows 6.160.800 tons world wide production for 1997. During the period 1986 to 1997 production of mushrooms in China increased by 584%. By 1997 production in China reached 4.000.000 tons, or about 64% of total world production. The latest production data of China shows 8.764.000 tons in 2002 which is a 22 fold increase or a 52% annual grow from 1978.

Based on the above we estimate the Chinese production for the Year 2007 to be 14 mil and total world production to be 17.000.000 tons, a 46 x increase since 1965

Of all cultivated mushrooms, shiitake has the greatest economic importance in China. Consumption in China was in the year 1997 3 kg per head. In 2008 it is estimated that per head consumption in China reached 10 kg or more then 30x the SA per head consumption.

China is exporting mostly dried shiitake. No exact information of total export is available, however we know that the USA imported in the year 1992 17.000 tons of dried shiitake, equal to about 120.000 tons of fresh shiitake. It is estimated, that demand for dried shiitake is increasing by more then 10% annually. Some information available is claiming an annual increase in demand in the western word of 30%. Assuming, that the demand has increased by 10% annually, then the import of dried shiitake into the USA would be about 85.000tons in 2009 or the equal of 600.000 tons of fresh shiitake.

At an average retail price of \$ 100/kg for dried shiitake, that volume represents an amazing \$8bil. Even the 17.000ton of dried shitake imported into the USA in the year 1992 would represent about \$1.700mil retail value, more then the total retail value of button mushrooms in the USA in the year 2002 which is estimated to be \$1.500mil.

In 1998, Japan imported 35.000 tons of fresh mushrooms and 11.460ton of tried mushrooms, almost all being shiitake and from China.

According to local trade experts, South Africa is importing large quantities of dried shiitake from China. That product is sold to the hospitality industry and speciality stores. No exact figures are available to us.

Based on volume, world production of button mushrooms had in 1986 a market share of 56%, shiitake 14%; in 1997 button mushrooms share was reduced to 32% and shitake's share increased to 27%. Estimation for the year 2007 is for button mushrooms 21% and for shiitake 44%.

China produced 89.3% of all shiitake grown worldwide (*Lentinula Edodes*)

**Reference:** Revista Mexicana Micoloica

[gerado.mata@inecol.edu.mx](mailto:gerado.mata@inecol.edu.mx)

paper: 2004 Quing Shen / Qi Tan / Daniel J. Royse

Growing *Lentinula Edodes* and other mushrooms in China – a low input technology alternative

**Reference:** PIC – International Organisation Pacific Island Centre – Fiji Japan

**Reference:** US Department of Agriculture News Letter 2007

In the USA and Europe there are two markets for gourmet mushrooms and in particular for shiitake, firstly the bulk imports of dried mushrooms from China, and secondly the locally, mostly organically produced gourmet mushrooms.

The imports from China are sold on price and are of dubious quality.

### **The farming of Mushrooms in China**

An EU study done by a German institute found in dried imported shiitake, (from China?), more than 27 times the maximum allowed content of cancer provoking heavy metals.

**Reference:** CVUA Karlsruhe 2003

The report by Revista Mexicana Micoloica highlighted the fact, that the 20 mil Chinese farmers producing at total of 4.000.000 ton (1995) of mushrooms or on average about 200 kg have extremely low input costs. The farms are family orientated and are using existing structure and in some cases sugar cane fields and trees to hang the plastic bags filled with growing mediums. Shiitake is a wood mushroom and will convert almost any form of cellulose up to 100% into mushrooms. Other reports are claiming that some Chinese farmers are using waste products such as discarded packing materials and newspapers as growing medium. The mushroom will absorb any chemical present in the growing medium.

Production Cost 2001 in \$/lb

	USA	China	Stillbaai
Material	0.85	0.12	0.22
Labour	0.60	0.11	0.24
Other	1.80	0.09	0.41
Total 1lb	3.25	0.32	0.87
<b>Total 1kg</b>	<b>\$ 7.15</b>	<b>\$ 0.70</b>	<b>\$1.91</b>

Reference: Revista Mexicana Micoloica

### **International Prices of Shiitake**

The import price into Japan is on average **US\$ 3.70/kg for fresh shiitake** and **US\$ 12.00/kg for dried shiitake**. These mushrooms are processed and packaged in Japan and sold to the retail market and also re-exported.

Local produced **fresh shiitake** sells in South Africa for just under R 200/kg (sold in 100gramm trays for R 19.50 at Woolworth's), for about 10.00 Pound Sterling per kg in UK and for \$ 9.00 per kg in the USA.

Organically grown **dried shiitake** sells in the UK for Pound Sterling 6.00 for 50 gram. (Pound Sterling 120/kg)

**Reference:** Maesyfiin Mushrooms

**Examples of fresh Shiitake pricing in the USA:**

(Note: Average wholesale price for white button mushrooms is in the USA \$ 1.30/per pound (\$ 2.80/kg) or more or less the same as in SA (R25.00 to R30.00/kg).

**Reference:** USDAgri Marketing Service)

Pittsburgh Produce Terminal

Shiitake \$ 4.20 to \$ 5.50 per pound (\$10.50 to \$12.00/kg)

Oyster mushrooms \$ 3.30 to \$ 3.60 per pound (\$6.60 to \$ 7.00/kg)

Cleveland Market

Imported fresh shiitake (from Mexico?) \$ 2.50 per pound (\$ 5.50/kg)

**Reference:** USDAgri Marketing Services (Wholesale Prices 2007)

2007 - Shiitake sold in USA

To chain stores \$ 4.00 to \$5.00 per pound (\$8.80 to \$11/kg)

To restaurants and delis \$ 6.00 to \$ 7.00 per pound (\$13.20 to \$15.50/kg)

**Reference:** Crop King (supplier to the industry)

**Organic grown fresh shiitake**

½ pound \$9.59 (\$42.30/kg)

Reference: Diamond Organics Moss Landing Ca

**Example of dried Shiitake Pricing in USA**

It takes about 7kg of fresh shiitake to produce 1kg of dried shiitake. The USA imports 100 times more dried shiitake (expressed in fresh-weight) than it grows shiitake.

**Reference:** USDAgri Service

**This pricing is of importance as the export of dried shiitake has huge potential for our company. Hand harvested, sun-dried and organically grown shiitakes are realising the highest price. Dried shiitake can be stores over a long period and is easy to transport.**

Dried organic shiitake: 1oz \$ 9.59 (\$338.00/kg)

**Reference:** Diamond Organics, Moss Landing Ca

Dried imported shiitake from China 1 oz \$4.00 (\$176.00/kg)

**Reference:** Earthy Delights, Michigan

Dried Shiitake (imported?) 1 oz \$4.00 (\$176.00/kg)

**Reference:** Everything Mushrooms

Below: Country of Origin: Japan? – According to PIC - Japan only exports 0.5% of its production. It imports about 20% of its own consumption from China.

Dried Shiitake pieces 50gram \$ 5.15 (\$103.00/kg)

Sun-dried Shiitake 50gram \$7.69 (\$ 153.00/kg)

**Reference:** Oshawa Natural Foods

Sun-dried organic shiitake 25gram \$ 9.55 (\$382.00/kg)

**Reference:** Eden Foods USA

**Example of dried Shiitake pricing in the UK**

Dried whole, organic shiitake, 50gram Pound Sterling 6.00 (Pound Sterling 120.00/kg)

**Reference:** Maesyfiin, Wales

**Example of dried Shiitake pricing in Germany**

Shiitake prices in Germany are lower then in other countries. The retail margin in Germany is famously the lowest in Europe.

Imported from India

100gram Euro 8.00 (Euro 80.00/kg)

**Reference:** Yakeba

Dried Shiitake (imported from China?) 100gram - Euro 8.00; 500gram – Euro 20.00; 1.000gram – Euro 49.00

**Reference:** Pilzshop – Hawlik Vitalpilze

**Sun Dried Shiitake**

Sun dried Shiitake mushroom have more flavour, aroma and taste compared with freshly picked shiitake. The ultraviolet rays from the sun help to increase the vitamin D content in sun-dried shiitake mushrooms.

**How to use dried shiitake:**

Just soak the dried mushrooms in warm water for 30 minute and use them like fresh mushrooms.

Dried shiitake can be stored for one year provided that they are kept in a sealed container in dark and cool storage and away from high temperature and humidity.

Professional gourmet cooks prefer sun dried shiitake over fresh ones.

## 4. The Shiitake Mushroom

Shiitake is growing wild in Asian forests on timber logs. In the years after 1980, Japan pioneered a system of replacing natural logs with synthetic logs, made out of agricultural waste products, such as sawdust and straw. That was supplemented with minerals such as phosphate and calcium and filled into mostly 2 kg plastic bags.

Synthetic logs are producing 3x more mushrooms per dry-weight in one-tenth of the time. Also environmental controlled growing chambers allow for the manipulation of temperature, humidity, light and moister content of the synthetic log to produce the highest possible yield.

The production of shiitake is labour-intensive and not suitable for large scale industrial production as being used for growing button mushrooms. It is an ideal product for emerging farmers, a low input technology, with a very short growth-cycles and immediate financial results.

In China, 20 mil farmers are growing shiitake. Many countries, such as Mexico and India have recognized that this agricultural product is ideal for the development of the rural community.

Growing gourmet mushrooms is new to the South Africa. However to our knowledge, reasonable quantities of dried mushrooms are being imported from China into SA.

International trends indicate that gourmet mushrooms are replacing to a large extent the industrial grown button mushrooms.

Various reports claiming that the international gourmet mushroom market is growing substantially. Some are mentioning more than 10%, other reports are claiming 30% annual growth.

Internationally amongst all gourmet mushrooms, in fact, of all mushrooms, shiitake has now expressed in value and volume, the largest market share.

Shiitake has a 50% longer shelf-life than button mushrooms, making it a better product for delivery over longer distances, and even suitable as fresh product for the export market. However, the bulk of shiitake is exported dried.

## 5. Health Benefits

In Asia, shiitake has being a staple diet since centuries, valued for its "umami" flavour, meaty texture and its medicinal properties. Lentinan, a natural complex carbohydrate found in shiitake is used for cancer treatment in Japan and China. In addition, the mineral selenium is being studied in the prevention and treatment of some cancers (selenium is a type of antioxidant)

Reference: ([www.cancer.gov](http://www.cancer.gov))

Shiitake mushrooms have been valued as food and medicine in Japan, China and other Asian countries for more then 1000 years.

Shiitake has replaced the white button mushroom as the most common edible mushroom in the world. Shiitake has long been recognised as a healing food, a quality, researcher attribute in part to their abundance of complex carbohydrates known as polysaccharides.

Lentinan and LEM are two polysaccharides in shiitake those scientists are finding can help the body with diseases involving suppressed immune system functions, including

various types of cancer. Researchers believe that these two polysaccharides may stimulate the immune system cells to clear the body of cancer cells. Shiitake are believed to have anti-viral properties, help to lower blood pressure and cholesterol, and to support liver function.

Shiitake mushroom are an excellent source of dietary fibres, vitamin D and other, as well as of essential minerals.

**Reference:** Eden Food

Shiitake are delicious, nutritious and can be used dried or fresh. Moreover, all eight amino acids are present in a ratio similar to the ideal protein for human nutrition. Shiitake are rich in amino acids leucine and lysine, which are deficient in many grains. Shiitake is also a good source of vitamin B. It is however shiitake's medicinal possibilities that are getting world-wide attention. In the last two decades, scientists have isolated substances from shiitake that may play a role in the cure and prevention of modern civilisations dreaded illnesses: heart disease, cancer and AIDS.

**Reference:** Mituko Japan

## 6. Farming of Gourmet Mushrooms

According to information available to us, a workforce of 60 will be able to produce comfortable 45 tons a month of top-quality gourmet mushrooms, processed and ready packed for local and export sale. (Equivalent of 6 tons of dried shiitake)

The facilities will be erected in phases in line with sales expectation. The final decision on the phasing will be done after a marketing report is completed by a marketing expert. In the meantime, we are assuming the 12 month period for phasing construction and production.

## 7. The Choice of Substrate

### Sawdust

Shiitake translated from Japanese means oak mushroom. It is growing wild in the forests on a type of oak called shii. It was a logical step by the first Japanese growers to use for the synthetic logs as growing medium the same type of oak sawdust. Oak sawdust is still the most used base substrate. Since then, research has shown that shiitake can be grown on a range of other cellulose based mediums; in fact almost all materials with cellulose content can be used, as long as it is supplemented with other nutrients lacking in the particular medium.

**Advantage of oak sawdust:**

- a) Good water holding capacity – up to 60% of dry weight.
- b) Growers have many years experience with it.

**Disadvantages:**

- a) It is very expensive. Novelle Mushroom Company in Hermanus has to import all his oak from overseas (via his consultant in Holland) for every 8 ton of mushrooms; a container with substrate has to be imported.
- b) Oak based substrate has to be sterilised. Oak is easily contaminated with other fungi competing with the shiitake spawn. Sterilisation is very expensive on energy use. The sterilisation has to be done at a temperature above 120 C.
- c) Once sterilised, the substrate can not be mechanically mixed with shiitake spawn. It has to be done by shaking the bags by hand. The mixing with shiitake spawn is through this less than perfect.
- d) Through the un-perfect mixing with spawn, the time for the logs to be fully pervaded with shiitake fungus can take up to 8 weeks, instead of 3 to 4 weeks for a perfectly mixed log.
- e) Total turn-around time for three harvests is longer by 1 month and through that a lower annual yield.

**Wheat Straw****Disadvantages:**

- a) Lower Water holding capacity – not more than 20% of dry weight
- b) Many of the required nutrients are not naturally available in the wheat straw

**Advantages:**

- a) Very cheap and plentiful available.
- b) No funds tied up in expensive inventory
- c) No risk of being short of substrate
- d) Wheat straw does not need to be sterilised. Pasteurisation by soaking it in 65 degree C hot water is sufficient. That hot water is being produced by the installed earth sourced heat-exchange system in exchange for chilled water. No additional energy is required.
- e) Wheat straw can be mechanically mixed with other nutrients and most importantly with the shiitake spawn. The thorough mixing is reducing the time required for the pervasions of shiitake fungus to 3 to maximum 4 weeks.
- f) Super Water Absorbent (SWP) will be added to wheat straw to increase the overall water holding capacity to the ideal 60%. SWP can hold 400 times water of its own weight. Adding 10gram of SWP to 10kg substrate will increase the water holding by 4liter or 40%.

- g) All other nutrients lacking in wheat straw can be added and are inexpensive.

## 8. Marketing

### Market Overview

#### South African Market

##### Button Mushrooms

We have already established that the market for mushrooms is dominated by one company (Denny) with a 60% share of the SA market and one product (button mushrooms – almost 100% of all mushrooms sold are button mushrooms.

The mushrooms are “manufactured” in very efficient “mushroom factories” and sold through a very efficient marketing structure, mostly to retail chains and to wholesalers supplying the smaller shops and the hospitality industry.

The international trend of replacing the market share of the inferior button mushroom with the higher quality gourmet mushroom has not taken hold in SA.

The market for mushrooms is growing in SA but less than internationally.

##### Gourmet Mushrooms

Presently, fresh gourmet mushrooms can be considered as a niche market in South Africa. Retailers such as Woolworth’s and SPAR are only slowly stocking up on that product with mixed results. Their complaint is that the prices are too high – Rand 120.00–200.00/kg, versus R 45.00 to 65.00/kg for button mushrooms and the public not informed or aware of that product.

A retail selling price of R 70.00 to 90.00/kg would however change their perception about the product.

A total different feed-back is coming from the hospitality industry. Speaking to wholesalers supplying that industry, there is a bend-up demand for well priced (R 50.00 to 60.00/kg) gourmet mushrooms in that industry.

##### Overseas Market

The market for gourmet mushrooms has developed hugely over the last years. The gourmet mushrooms are not anymore considered as a niche market. They have established themselves within the health-shops and the hospitality industry.

The sold volumes are increasing in the West at an annual rate of more than 30%. Most of the mushrooms are sold dried and are imported, either from China, Japan or India. We are

assuming that most of the products sold under the label “Country of origin Japan” are in fact mushrooms produced in China, exported to Japan and then re-exported to EU or USA. Globally, gourmet mushrooms are today a multi-billion \$ industry and now larger than the global coffee industry.

(See also PIC report)

## **Market Assessment**

### **Target Market**

#### **a) South African Retailers**

**Woolworth’s** with about 340 Food Stores is a prime customer.

Their merchandising department for fruit and vegetable have presently a purchasing agreement with Novelle Mushrooms (Hemel en Aarde – near Hermanus, WC) for gourmet mushrooms.

Their first attempt was not too successful as the price was too high (Rand 200.00/kg) and too little awareness by the consumer.

The manager in charge of merchandizing fruit and vegetable is reluctant to support our project till there is more certainty that we have the funding, that we are able to deliver at the right price, the right time and the right quality.

**SPAR** with more than 200 SUPER-SPAR.

#### **b) Deli’s and Health Shops**

There are at least more than 100 up-market deli’s and health shops in South Africa. As soon as we have the product and we can deliver at the promised wholesale price of Rand 50.00 to 60.00/kg and to the promised quality, we can expect full support from these retailers.

#### **C) Wholesalers**

Most of the wholesalers are supplying the smaller shops but in particular the hospitality industry with fruit and vegetables. Speaking to a few of those wholesalers in Cape Town, I was left with very good feed-back. The common response is that the hospitality industry is desperate in finding a reliable source for gourmet mushrooms at a reasonable price.

That industry is fully aware of the quality and benefits of gourmet mushrooms. The main problem what Woolworth’s and SPAR have found in marketing gourmet mushrooms, was the lack of awareness by the consumer, apart of the retail price being too high. That problem of lack of awareness does not exist in that industry, quite contrary, that industry is desperate looking for supply.

#### **D) Hospitality Industry**

As mentioned above, that industry is ready for that product, much more so than the retailers.

Large groups such as Protea Hotels are very interested in bulk supply and promised us their support. Otto Stelik, the Chairman of Protea Hotels, indicated his personnel support and possible involvement in the Trust.

There are more than 200 up-market restaurants in Cape Town alone, a total of 1.000 hotels and restaurants could be supplied by our company. Their volume of demand could be initially be greater than that of the up-market retailers.

### **E) Export Market**

The international market for gourmet mushroom is huge, as we have established above. The export of our product, in particular if organically grown, sun-dried and hand-harvested and as a BBEE product to the EU and to the USA has enormous potential. Of the estimated 200.000 tons of dried shiitake and other gourmet mushrooms exported a year by China, we only need a tiny fraction to sell all of our production. Assuming, that all our mushrooms are dried and exported, then our annual production of dried shiitake will be about 75 tons, or in % less than 0.04% of the dried mushroom exported by China.

Dried shiitake, or any of the other gourmet mushrooms, are seen by the consumer as a health product and sold to health shops, up-market food stores and to the hospitality industry. Chinese produced up-market food is a hard sell to that market. The 20 mil Chinese farmers growing mushrooms under questionable hygienic conditions and using questionable growing medium for the production of mushrooms – mushrooms are utilising and converting almost 100% of the growing medium for their own growth - have to sell their mushrooms to wholesalers, many of them from Japan. Those wholesalers then package them, a few of them hiding the fact that the mushrooms are grown in China, and then sell them on to the local and international market.

Our product will be grown by utilising organic standards, in a fully controlled hygienic and climatic environment, using only natural and unpolluted growing mediums, will be natural sun-dried and away from pollution. The product will be “political correct” and of guaranteed top quality. It will be regarded as a top quality and desirable product.

Our product will appeal to a person concerned with healthy living and being politically correct.

In the USA there is a similar trend, maybe not as strong as in Europe, however there is a large and wealthy ethnic minority, very keen to support a product made by emerging farmers in Africa, particular if it is top quality.

Japan, where hygienic standards are extremely high, would be another market to consider. Local produced shiitake will be much more expensive than the imported product from South Africa. Presently, top quality fresh shiitake is exported from South

Korea at US \$ 10.00/kg to Japan. No prices for dried shiitake from South Korea are available. Assuming, that the dried version will be at least 7 times more expensive than fresh shiitake, then one kg dried shiitake from South Korea will be exported to Japan for about \$70.00/kg. Our estimated own export price is Rand 350.00/kg (\$35.00/kg), well within the prices achieved for top-quality products.

**Reference:** PIC

Chinese farmers are having an extreme cost advantage over our own production. However, they are not selling directly to the market. They have to hide the fact, that the mushroom has been grown in China. The middleman's margin is reducing the cost advantage to zero. Chinese dried shiitake is exported in bulk to the importer for about \$12.00/kg. However the importers wholesale price, after being processed and packaged and prepared for the retail and hospitality industry in the USA is about \$ 40.00 to \$ 60.00/kg. The same product is then sold in the shops from \$100.00 upwards.

In Germany where traditional retail margin are very low, dried shiitake is available over the internet for a low as Euro 49.00/kg. Our export price to Germany will be about Euro 30.00/kg, still competitive with the Chinese products.

We will be able to package the product in South Africa, export it and sell it via wholesalers to the speciality shops and hospitality industry and directly via agent to larger retailers and hotel groups.

At the end, there will be no price advantage for the Chinese farmer selling an inferior product.

## **Marketing Strategy**

We will consult with marketing consultants, if required.

In our financial study we budgeted a gross selling price of Rand 50.00/kg (fresh shiitake) and a net selling price of R 40.0/kg. The difference (15%) is allocated for the above marketing management/company structure.

## **An example how to distribute**

The Japanese wholesaler MITOKU is packaging imported Chinese dried shiitake and is selling the product through a network of distributors.

I am listing that network in order to highlighting the existing export market for dried shiitake.

Dried Shiitake is a global industry. Industry expert are claiming, that the volume of business is larger than the total coffee industry.

**MITOKU list of distributors****Argentina**

Lago Berg SA

[lagobergsa@ciudad.com.ar](mailto:lagobergsa@ciudad.com.ar)**Australia**

Pureharvest

<mailto:info@pureharvest.com.au>[www.pureharvest.com.au](http://www.pureharvest.com.au)**Austria**

Naturgarten GesmbH

[www.naturgarten.com](http://www.naturgarten.com)**Belgium**

Lima N.V.

[www.limafood.com](http://www.limafood.com)**Brazil**

Ecobras Centro

[www.ecobras.com.br](http://www.ecobras.com.br)**Canada**

Koyo Foods

[www.koyofoods.com](http://www.koyofoods.com)**Costa Rica**

Bioland Centroamericana S.A.

[bioland@bio-land.org](mailto:bioland@bio-land.org)**Croatia**

Biovega Ltd

[www.biovega.hr](http://www.biovega.hr)**Czech Republic**

Sunfood Company

[mervart@dobruska.cz](mailto:mervart@dobruska.cz)**Finland**

Oy Makrobios AB

[www.makrobios.fi](http://www.makrobios.fi)**France**

Celnat

[celnat@celnat.fr](mailto:celnat@celnat.fr)

**Germany**

Arche Naturprodukte GmbH

[www.arche-naturproduckte.de](http://www.arche-naturproduckte.de)**Hong Kong**

China Organic Products (HK) Ltd

[nancytsaohk@netvigator.com](mailto:nancytsaohk@netvigator.com)**Israel**

Taam Teva(1988) Tivoli Ltd

[batya@taam-teva.co.il](mailto:batya@taam-teva.co.il)**Italy**

KI Group SpA

[www.kigroup.com](http://www.kigroup.com)

La Finesta Sul Cielo

[www.lafinestrasulcielo.it](http://www.lafinestrasulcielo.it)

Probios Srl

[www.probios.it](http://www.probios.it)**Lebanon**

Anab Trading

[www.anabmacrobiotic.com](http://www.anabmacrobiotic.com)**New Zealand**

Ceres Enterprises Ltd

[ceres@ceres.co.nz](mailto:ceres@ceres.co.nz)

Enso International

[sales@enso.co.nz](mailto:sales@enso.co.nz)**Portugal**

Provida

[www.provida.pt](http://www.provida.pt)**Serbia**

BIO Spajz

[www.bio-spajz.co.yu](http://www.bio-spajz.co.yu)**Singapore**

Essential Living

[www.essliv.com](http://www.essliv.com)

**Spain**

Natursoy

[www.natursoy.es](http://www.natursoy.es)

Kunga

[Juribio42@hotmail.com](mailto:Juribio42@hotmail.com)

**Sweden**

Kung Markatta

[www.kungmarkatta.se](http://www.kungmarkatta.se)

**Switzerland**

s'Lotusbl'mli

[www.lotusbluemli.ch](http://www.lotusbluemli.ch)

**United Kingdom**

Clearspring Ltd

[www.clearspring.co.uk](http://www.clearspring.co.uk)

**United States**

Natural Import Company

[www.naturalimport.com](http://www.naturalimport.com)