Business Profile for HyHarvest(pty)ltd

Company registration number : 2017/277147/07

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Executive summary

This proposal is for the establishment of A-Frames Hydroponic Farming. Hydroponics is cultivating crops in nutrient solution or media without soil. It's the art and science of getting all the elements required for growth in concert together with a complete macro and micro system that delivers all necessary elements to the plant as and when the plant needs it.

The advantage of hydroponics farming is that there is no need for soil, and only about 10% of water is needed and the availability to produce vegetables all year round in large quantities as opposed to conventional farming which is seasonal. Plant growth is often limited by environmental factors by applying a nutrient solution directly to a plant's roots in a controlled environment, a farmer can ensure that the plant always has an optimal supply of water and nutrients. This nutritional efficiency makes the plant more productive.

Problem statement

The world's population nearing 7.5 billion humans on earth; food and water are the biggest issues that our countries are facing. The world population is expected to grow to 9.6 billion by 2050, according to the Food and Agriculture Organization of the United Nations (FAO) and more than 10% – about 800 million people – are undernourished and do not have enough food to lead healthy active lives. If we want to avoid mass malnutrition, we're going to have to up our food production by 70 percent (%) by 2050; with that in mind we have to supplement traditional farming methods with modern technology.

Plants need water, air, energy (light), a suitable climate and certain nutrients to grow, and this will have to be addressed if we want to deal with future food supply challenges.

- South Africa is suffering from unemployment especially youth, the youth unemployment increased by 153 000 (0,4%) in 2018 compared to 2017.

- Global climate change is possibly the greatest environmental challenge facing the world this century. Although often referred to as 'global warming', global climate change is more about serious disruptions of the entire world's weather and climate patterns, including impacts on rainfall, extreme weather events and sea level rise, rather than just moderate temperature increases.

- Water is arguably the greatest of the four main global challenges. World Health Organization statistics show agriculture uses about 70% of the available freshwater on our planet. This scenario is unsustainable in the long-run and requires renewed focus on efficient water use.

- Available areas of farmland suitable for crop production are declining at tremendous rates, exacerbating the challenges involved in meeting the food demands of the future. By the end of this century, farmers will need to produce double the amount of food with less water and land, using less energy, while facing sharp increases in the costs of energy, labor, mechanisation, and fertilisers.

Solution

- HyHarvest(pty)ltd farming offers a model that can alleviate poverty while simultaneously easing strains on the environment.
- Use as little as 10% of the water on irrigation by recycling water.
- Eliminate the need for herbicides and pesticides, thus giving fresh and nutritious produce.
- Need less arable land to produce vast yields of crops yearly.
- Year-round production
- Consistent top quality produce, allowing for optimum price levels
- Flexibility to switch between crops at short notice
- Ability to produce regular quarterly quantities consistently throughout the year
- Product is high premium quality attractive to the market
- Product can be harvested "roots on" to increase shelf life

It is believed that opportunities could be exploited locally with the objective to unlock township radical economic transformation which will yield much desired job creation and poverty alleviation.

HyHarvest(pty)ltd will be using an eco-sustainable, clean tech growing practices to grow fresh vegetables locally, year-round. A totally controlled environment ensures reliable, safe produce with predictable yields regardless of external weather conditions - all without the use of pesticides. Centralized control and growing expertise, high tech, precision hydroponics, and nutrient injection combine to deliver the highest yields of any growing method and growing to focus on freshness, taste and nutrition. The result is greatly reduced spoilage and significantly improved profit margins – all with a measurably lighter and more favorable environmental footprint.

Business, Administrative & Contact Information

Business Name	**:** HyHarvest(pty)ltd
Company registration number	: 2017/277147/07
Tax reference number	: 9846505163
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Physical address	: 71 Takbok Street Meyerton Park Meyerton

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Bank	: First National Bank (FNB)
Branch	: Meyerton
Account number	: 62762463504
Branch code	: 25065500
Account Director	: Zandile Kumalo
Account Director's contact	: 078 566 3054

Company Overview

Inception and location

HyHarvest(pty)ltd is a green social enterprise offering innovative and creative solution within the fresh produce industry. We started the farming enterprise initiative and established the company's first conventional leafy green plantation in 2018. The enterprise ran its operations from a 2000sqm farm owned by Zandile Kumalo through the signed lease agreement. With the growth of the company and its vision to be an agri-tech company, thus we have remodeled to an A-Frame NFT (Nutrient Film Treatment) system where which will be located at VUT Southern Gauteng Science and Technology Park. We have been working with WIBC for technical experience in the agri-tech space where we have been running a 100sqm hydroponic farm that has the following systems: A-Frame NFT System; Ebb and Flow system; Vertical system; Open bag system with a variety of 13 different crops in the farm. The company has been in existence for 1-year.

Farming Model

The company will concentrate on the production of leafy greens and herbs in a greenhouse tunnel and in time will pursue to more selective high valued crops that will be the growth of the farm. The reason for the hydroponics model is to reduce fertigation requirements, costs like tractors, high costs in harvesting and other input costs. Most importantly is for an income generation for subsistence farming and competitive edge to the farmers.

Our business strength is the yields that can be produced using the A-fame hydroponic model using minimum land; with an output of intensive and high turnover production, the improvement of taste in vegetables, excellent quality and nutritional value. While resting on strong ethical morals, HyHarvest pushes boundaries in order to create new standards of wellbeing through fresh produce supply in the community. It integrates a combination of technology innovation, farming solutions and business management to enable quality supply of fresh produce throughout the seasons.

Community Development

The core part of HyHarvest's strategy is to impact the community directly through inclusion in farming practices as well as direct job creation. HyHarvest therefore adopts a direct "Empower-To- Empower Model".

The company will provide education, experience and research in the hydroponic field. It has the experience and extensive knowledge of a technical specialist; Puseletso Mamogale from Medu Farmers. Future Farms SA; Wouldn't It Be Cool (WIBC) and the Urban Agricultural Incubators (UAI) as partners and advisers.

Market Strategy

The farm is located in a strategic place in townships targeting local traders/bakkie traders, public, retailers, food processors, pack houses and major retail outlets and export markets for the vegetables companies such as Johannesburg Fresh Produce Market, Freight Fresh Produce Market, Made with Rural, Rothe Poultry and Vegetables, Pre-schools and Schools and the public. We have accumulated offtake agreements from some of the wholesalers, retail companies and pre-schools. (please refer to supporting documents).

Short-term plan to long-term plan

The short-term plan is to expand the plantation into a full 200sqm of leafy green plantation. The medium-term plan will be to acquire a 1Ha farm and have a fully development hydroponic farm to help us meet our vision to alleviate poverty and uplift communities. These plantations will supply the planned full 5Ha hydroponics farm of a variety of crops. A long-term plan is the acquisition of more farms to increase the hectares of plantations, facilities modifications, equipment for the farm and development costs of the company. That will enable HyHarvest to add newer innovative products.

Investment Required

The investment required for the farm is R350 000 for every 2 500sqm, yielding 12 500kg of Mixed oak lettuce. This investment covers the infrastructure, the system and the first-year operating costs.

Greenhouse NFT System for 2500 sqm	Quantity (per 2500sqm)	Total (Incl. VAT)
Food grade NFT rectangle profile pipes	3 360	R1 168 860,00
A-frame mounts	168	R689 724,00
Water delivery	168	R672 336,00
Tanks	168	R94 668,00
Water return	168	R233 192,40
Greenhousing	24	R1 173 000,00
Labour (incl. consumable)	168	R309 120,00
Seedlings	97 440	R309 099,60
Essentials		R300 000,00
Operating costs		R50 000,00
Total (Incl. VAT)		R5 000 000,00

Strategic Overview

Vision Statement

- To alleviate poverty and uplift communities
- To be a leading producer with an intensive farm, producing high-quality vegetables year-round.

Mission statement

- Is to produce nutritional and flavorful vegetables for consumption in South Africa.
- To create opportunities for leadership and highly productive teamwork for local women and men who work on the farm.
- To acquire more farms in order to increase HyHarvests fresh produce plantations in South Africa.
- HyHarvest(pty)ltd aims to expand farming by buying its own land.

Values

- Professionalism: We will continually offer the best of our collective skills, experience, and knowledge for the satisfaction of our clients.
- Quality service: We will offer high quality service at all times.
- Customer satisfaction: Clients are the lifeblood of our business and we will treat them with the utmost respect.
- Lifelong development: To continually develop our skills, processes and capabilities so as to be better at everything we do.

Business goals

- § Designs and implements the hydroponics farms.
- § Acquire land from government and through partnerships with land owners.
- § Develops and capacitate Youth and Women farmers to implement and maintain the hydroponics farms.
- § Establishes the HyHarvest's internal R&D to continually develop skills, products and services, processes and capabilities.

Strategic objectives

- § To expand current farming production from 100 sqm to 1ha by 2024.
- § To attract more Youth and Women into the agri-tech farming technique.
- § To increase jobs created from 3 agri-tech jobs to 60 agri-tech jobs by 2024.

Products and Services

The Hydroponic farm will grow leafy greens – Mixed oak Lettuce, as our first plantation. The expansion plan will ensure the long-term viability and a revenue steam for the farm, a variety of cash crops will be cultivated.

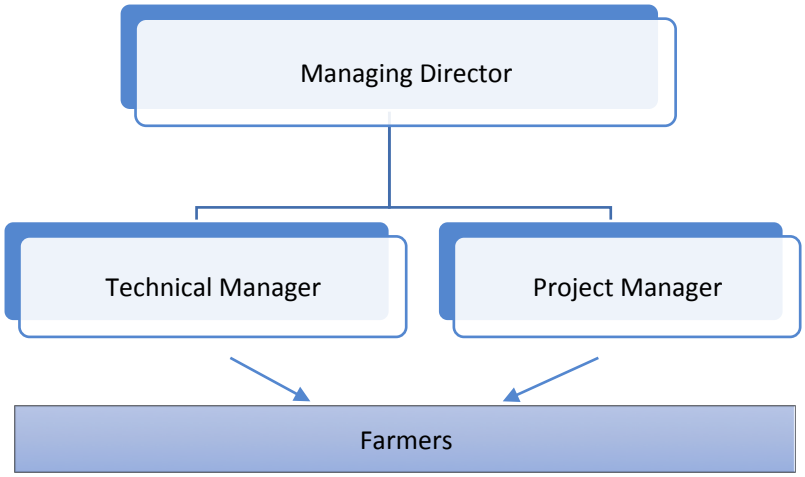
The targeted cash crops are:

1. Mixed oak lettuce

2. Herbs

3. Micro Greens

HyHarvest(pty)ltd Group Structure



Name	Position	Job description	Qualification	Skills and Experience
Zandile Kumalo	Managing Director	Oversees financial transactions both internal and external for the organization. Financial planning and monitoring. Directs and manages across the whole enterprise on a day-to-day basis.	National Diploma in Analytical Chemistry, Specialist in Carbon footprint calculation and analysis	Entrepreneurial skills Laboratory Quality Assurance analyst; Chemical Laboratory Analyst; Organic Chemistry Analyst; Carbon footprint calculation and analysis Book Keeping

Puseletso Mamogale	Technical Manager	Responsible for planning, organizing and overseeing agricultural production, expansion. Manages and Balances the chemical nutrients. Manages across the whole farm on a day-to-day basis.	Certificate Vegetable Production	Entrepreneurial skills Farm management skills Problem Solving Business management skills
Grace Mohapi	Project Manager	She will be managing the business on a day-to-day basis. She will be managing the project across the whole enterprise.	Advanced Diploma Project Management (NQF7), Postgraduate Diploma Project Management (NQF8),	Project management skills. Business management skills. Entrepreneurial skills

Table: Comparison of Conventional Farming and A-Frames Hydroponics

	Hydroponics Farming	Conventional Farming
Plants per 2500sqm	90 000	65 000
Water per cycle	1 000 liters	2 500 liters
Kilograms per cycle	22 500kg	16 250kg
Time to Harvest	3- 4 weeks	8 – 12 weeks
Yield/year	270 000 Kg	195 000Kg
Soil Preparation	No	Yes
Tractors and Machinery	No	Yes
Herbicides/Pesticides/ Fungicides	Minimal - Zero	Yes

In conventional agriculture, soil supports a plant's roots – helping it to remain upright – and provides it with the nutrients it needs to grow. In hydroponics, plants are artificially supported by a growing medium, and a solution of ionic compounds provides nutrients instead. Plant growth is often limited by environmental factors. By applying a nutrient solution directly to a plant's roots in a controlled environment, a farmer can ensure that the plant always has an optimal supply of water and nutrients. This nutritional efficiency makes the plant more productive.

Gallery
HyHarvest first plantation
First conventional plantation for mixed oak lettuce.

HyHarvest and WIBC First NFT Hydroponic 100sqm farm

A-Frame: Mixed Oak Lettuce

Dutch Bucket: Lime Tree

Vertical: Mixed Oak Lettuce and Cherry tomatoes

LED Lighting: Mixed Oak Lettuce

EBB and Flow: Baby Spinach

Conclusion

Progress has been rapid and results obtained in various countries have proved that this technology is thoroughly practical and has very definite advantages over conventional methods of crop production. It is still new to the South African markets and the growth for hydroponics farming is growing. The market and industry analysis have confirmed we have a viable business opportunity. The market is predicted to grow as the traction to hydroponics techniques grow. For the business to succeed it is imperative to have a growth strategy by increasing the number of farms which is in line with our business objectives.