



**Maestría en Gestión e Innovación Tecnológica**

**Title**

**Design and construction of an innovative prototype  
of aeroponics to obtain germinated**

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# Design and construction of an innovative prototype of aeroponics to obtain germinated

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## 1. Introduction

The cultivation of different plants, seeds and fruits is one of the main economic sources that provides food to humans or cattle and raw materials industry. However, it is necessary to develop alternatives of agricultural production that benefit the environment and contribute to food sustainability generated by high demand and population growth.

Aeroponics system represents an alternative for agricultural production that considers environmental elements and contributes to food sustainability. This system allows the growth of plants by air, with regular applications of nebulized nutrients to the root system, so use in production of germinated seeds is ideal. The germinated are rich in biologically valuable substances necessary for the body, such as vitamins and enzymes, are very easy to digest and assimilate well.

The field development requires teams that combine features of design, production capacity, materials and economy as a possible implementation. In addition to meeting quality standards and long life avoiding investing large resources and ensuring a viable system, economic production.

## 2. Objectives

### 2.1. General objective

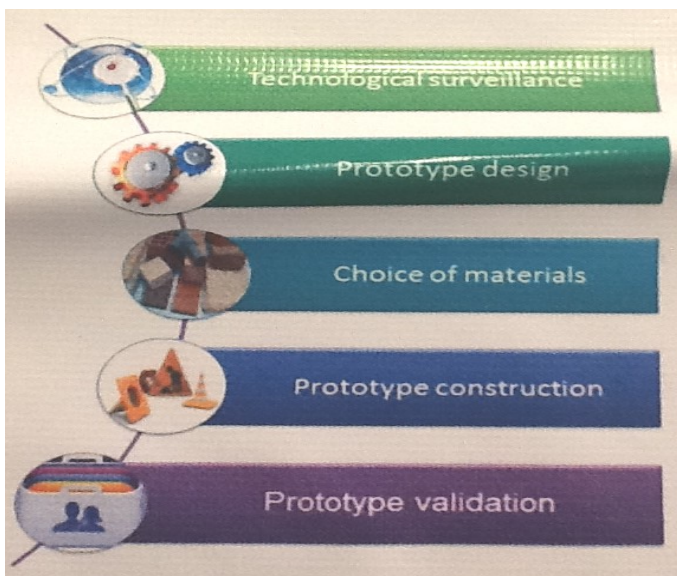
Implement an innovative prototype for the process of obtaining germinated using aeroponics system.

### 2.2. General objective

- Make reference to technological surveillance equipment aeroponics.
- Design and build an innovative prototype for the production of germinated using aeroponics system.

## 3. Method

In Figure 1 the methodology in this research is based, for the construction of the prototype..



Then in Figure 2 can be seen the initial prototype drawings, in which can be seen the base structure, the side walls, doors and the container.

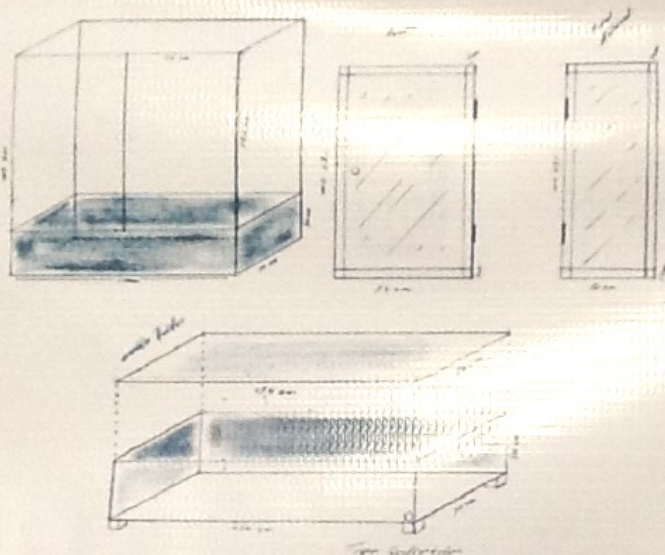


Figure 2. Diseño base del prototipo

In Figure 3 a pair of images of the construction team at different stages of the process, in which you can appreciate the progress is presented.



Figure 3. Construction del prototipo



Shown in Figure 4, the prototype is in its final phase of construction and ready to work

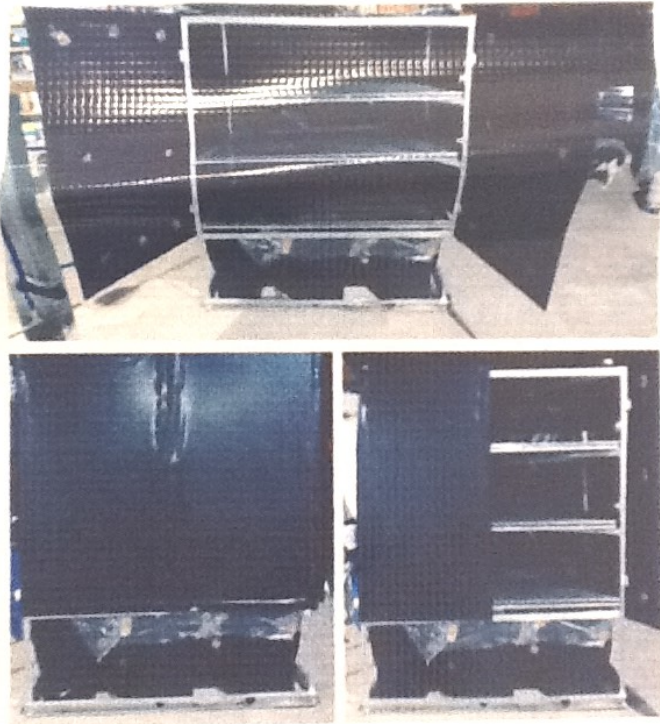


Figure 4 conjunto de imagines del final del prototipo para la obtencion de germinandos

## 4. Results

Table 1 shows the most outstanding patents found through technological monitoring, in order to know about the advances in systems aeroponic's, this search was conducted in the database of the WIPO IMPI, LATIPAT low search terms: aeroponics and aeroponic

System	Description
Method and equipment for aeroponics growth US11/224,491	In this system and method, the aeroponics seeds are deposited on a plate containing micro-fleece to place the plant in a growth chamber.
Aeroponics system and the spray device for better aeration and plant growth US 13/169,599	Design of a spray device as a double T and a method for growing large plants that increase the frequency of harvest.
Vertical rotational aeroponics CO6750134 (U1)	Designing a system with hexagonal tubular structure and polyethylene (innocuous material) for the development of horticultural crops of leaves.
Aeroponics system WO2015171367	Aeroponic system of root, is a plant cell made up of 2 separated by a perforated divider chambers.
Aeroponics system and methodology US20140137471	Aeroponic system consisting of a growth chamber and support made of cloth.
Aeroponics crop rotating device CN102845292	Aeroponics system consisting of rotating device for aeroponics crop. It belongs to the technical field of culture devices.
Aeroponics system for growing plants WO2012054385	Aeroponic system for growing plants increases growth by spraying in the roots of a nutrient solution. This solution is rechargeable and purified with ultraviolet light at the same time. It comprises LED lamps to illuminate the plant leaves with power-saving system and heat reduction.
Aeroponics cabinet continuous culture WO2010089429	Cabinet containing therein aeroponic cultivation system, has a cleat both the floor and the walls plus doors that facilitate the operation and maintenance of crops. It presents an aesthetic finish to harmonize with the decor.
Aeroponic system expandable US20120085026	Expandable aeroponics system able to grow horizontally or vertically by adding devices to the support structure of the base. The system consists of a common pump, valves, filter drainage, nutrient supply tank.

Table 1. Results of surveillance technology patent of aeroponics.

Parts of the system	Cost (MXN)
Container	
Spray system	
Cabinet	
Frame	
Total price	\$ 2,640,66

Table 6. Costing general prototype parts.

Equipment running, running the first test, to get germinated

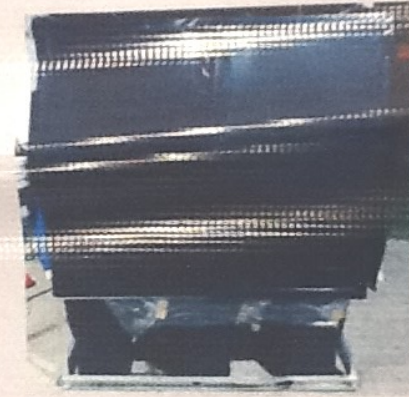


Figure 7. Prototype AEROPONICS for obtaining germinated in operation.

## 5. Conclusion

The prototype of aeroponics proposed in this paper is inexpensive, contains similar parts to other aeroponic systems referenced, but the design was improved. It is worth mentioning that it is a product that is not in the Mexican market. Tests with different germinated will determine its viability.



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