

CLASS 8

COSTS AND PROFITABILITY OF POPULAR HYDROPONICS GARDENS

Complementing what has been seen in the video with the technical information contained in this **Manual** we obtain all the necessary technology to grow vegetables using the Popular Hydroponics Gardens method proposed in this publication prepared by the UNDP and FAO.

In addition to being a very productive activity Popular Hydroponics Gardens are compatible with home tasks, study and the normal activities of each of the members of the family. The system does not require to be exclusive but it demands constancy and the dedication of a small amount of time every day. It is a complementary activity which can be carried out jointly by all the members of the family depending on the free time each one is willing to devote to the garden.

Benefits to be obtained from popular hydroponics may be divided into two groups: those of a social type and those of an economic type, which are expressed as profitability or net income.

Social Benefit

The social benefit is represented by a change in the living conditions of the families considering a better quality of food, health protection and the income obtained. The new income permits self financing of the operation and expansion of the garden, in addition to covering small daily needs which could not be met before.

The benefit is also reflected in the change of attitude of families and communities, which are no longer passive members in the process of their own development but become active members. It is important to point out how children assume highly positive

attitudes through these productive activities, which in addition to allowing them to harvest edible products, provide them with the possibility of acquiring practical knowledge at an early age making some areas of learning, such as chemistry, biology, etc., less abstract for them.

Financial Profitability

The financial benefit or profitability is what is expected from continuous and systematic exploitation of hydroponic gardens with areas above 30 square meters of crops, seeking to obtain financial returns for the expenses incurred and the work carried out.

As an example:

The adequate management of PHGs has demonstrated through different experiences and trials that the total production cost per square meter is paid for with the sale of thirteen heads of lettuce, estimating a loss of three heads of lettuce per square meter per harvest.

It is essential to establish a plan including all the stages of the crops selected as the most promising, considering environmental conditions, technical management possibilities and markets available for selling the products. The important thing is to have some type of product available for sale in every season of the year.

To determine the profitability it is necessary to define production costs, sales price and the difference between these two or the profit. There are two types of production costs:

- cost of installation of the garden, and
- the cost of operation during the productive period.

Installation costs include the value of the containers, the plastics, the substrates, hoses, tools and all the investment required to start. This will be recovered after several harvests. The equipment needed for the preparation, storing and application of

nutrients and natural insecticides such as containers, buckets, atomizers and others are also considered.

Operational costs include water, nutrients, oil and the pest control products when they need to be purchased (garlic, hot peppers), a notebook for recording technical and accounting information, and labour.

For a better understanding of the subject of profitability we will give an example with one of the most accepted species, both by growers as well as consumers, as is the case of lettuce. We shall determine the cost of production in the floating root system which is preferred by those who intend to establish a profitable enterprise, as production is obtained in less time and with less physical effort, but with greater dedication and constancy.

We learned in previous classes that we can obtain 31 heads of fully grown lettuce per square meter, and therefore we calculated the production cost per square meter of crop.

Table 1. Fixed installation cost

Inputs	Total cost/m ² US\$	Amortization N° harvest US\$	Chargeable value per m ²
Wooden container	4.70	20	0.23
Black plastic	0.36	5	0.07
Styrofoam	1.29	5	0.25
Tools	1.03	10	0.10
Equipment	1.51	10	0.15
Labour	2.05	10	0.20
Sub total			1.00
Unforeseen expenses			0.50
Total fixed cost m ²			1.50

In some countries it will be necessary to add the cost of covering material to protect the crops from excess sun, frost or acid rain, which increases the cost per square meter by approximately US\$ 1.5 to 2.0

Table 2. Variable production costs (for one harvest)

Inputs	Total cost/ m ² US\$	Chargeable value per m ² / harvest US\$
31 seedlings from 35 day old seedbed	0.48	0.48
Nutritive solution	0.63	0.63
Natural insecticides	0.05	0.05
Labour	1.80	1.80
Sub total		2.96
Unforeseen expenses 5%		0.15
Total variable costs		3.11

Total cost (fixed plus variable costs) 4.61

Income

Estimating a loss of 9 per cent over 31 heads of lettuce, we obtain 28 units, the sales price of which was estimated at US\$ 0.31. This leaves us a gross income of US\$ 8.68/m²

$$\text{Profit} = \text{Total income} - \text{Total cost}$$

$$\text{Profit} = 8.68 - 4.61 = 4.07 \text{ US\$ per m}^2/\text{lettuce harvest}$$

$$\text{P.I.} = \frac{\text{Profit}}{\text{Total investment}} \times 100 = \frac{4.07}{4.61} \times 100 = 88.28\%$$

P.I. (Profitability Index) = 88.28%

It must be stressed that costs include the value of labour provided by the family, which means that a double benefit is obtained: employment plus the crop's profitability. The fixed costs estimated in the example could be less if second hand wood is used. In a number of countries it is possible to obtain "palets" or platforms for stowing loads at shipping ports or airports, which, when taken apart provide good quality boards of uniform sizes.

The above example may be taken as a basis to determine the profitability of other crops, which may be different, depending on comparative advantages or adverse factors affecting the cultivation and marketing of some species. Cultivation of some species is more advantageous in some countries than in others, in general, however, profitability is high for most of them, especially lettuce, which has proved to be the best crop in all countries both from the technical as well as the financial point of view.

As has been shown in this audio-visual course (video and manual) Popular Hydroponic Gardens make it possible to obtain social and financial benefits. That these benefits become a reality which will help improve the families' quality of life depends on dedication and constancy.

Plan your time and begin to install a PHG and if you carefully follow the recommendations made you will obtain the first harvest of different vegetables, and medicinal or aromatic plants before ninety days.

