Small Scale Aquaponics For Households

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The GreenFin Aquaponics is a AgroTech headquartered in Portalegre, Portugal, originating from the Polytechnic Institute of Portalegre.

Fruit of Research and Development in Circular Aquaponics Systems, obtained through the integration of two distinct methods of food production: - **Aquaculture** and **Hydroponics**.

In a single circular system, **Aquaponics** provides an integrated, sustainable, biological, ecological and economic food production method for both the consumer and the producer.
How Aquaponics Works?

1. **Fish food**
2. **Fish harvest**
3. **Clean water**
4. **Fish excrete waste products**
5. **Detritivores eat solid parts**
6. **Vegetables absorb NO₃**
7. **CO₂**
8. **Light**
9. **Nitrosomonas sp. converts NH₃ to NO₂**
10. **Nitrospira sp. converts NO₂ to NO₃**

**Els Engel 2013**

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How Aquaponics Work?

- Aquaculture Tank
- Bio Media Filter
- Deep Water Culture (DWC)
- Hydroponic Media Bed
## Hydroponics vs Aquaponics

<table>
<thead>
<tr>
<th>Hydroponics</th>
<th>Aquaponics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemicals nutrients (organic or non organic) are used</td>
<td>Organic matter produced by fish is primary used as nutrients</td>
</tr>
<tr>
<td>Bacterial growth are inhibited</td>
<td>Bacterial growth is used in the production of nutrients from fish waste</td>
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<tr>
<td>Less Cost-effective</td>
<td>More Cost-effective</td>
</tr>
<tr>
<td>Systems should be unloaded after certain period of time due to the buildup of slats and toxic chemicals</td>
<td>As only natural organic nutrients are used, the replacement of water in the system is not required</td>
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<tr>
<td>Difficult to maintain</td>
<td>Medium Difficult to maintain</td>
</tr>
<tr>
<td>Market establish</td>
<td>Market growing</td>
</tr>
<tr>
<td>Well funded</td>
<td>Difficult to fund</td>
</tr>
</tbody>
</table>
Regulations & Constraints

Aquaponics

Hydroponics?
Industrial Aquaculture?
Wastewater Recycling?
Urban Aquaculture?

EU Regulatory Framework

Policy Recommendations
Water Law
Construction Law
Planning Law
EU Organic Regulations

Funds
Primary Market

Small Scale Aquaponics for Households
Urban Farming
Urban Public Spaces
Thank you!

CityZen
Interreg Europe
European Union
European Regional Development Fund

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