AGRICOLTURA 2punto0

ECOLOGIA APPLICATA

E10348057

Davide Balbi

ImpattoZero srl

Ceo & Founder

Farming On Demand

Acquaponica

The Team

AGRICOLTURA 2.0 punto
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Marco
De Caneva

Electronic Engineering
Hardware Design and Production specialist

Giovanni
Compagnone

Foreman
Building Permits

Tindaro
Chiofalo

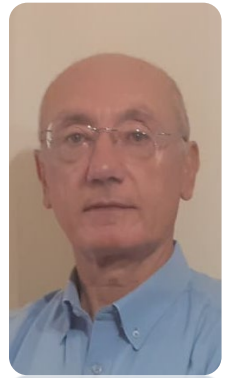
Ecosystem Economics
Aquaponics Managment

Davide
Balbi

Founder
CEO

Gianluca
Del Vecchio

Fish Farming
Marine biology



Raffaele
Marotta

Engeneer 3D Cad
Aquaponics Design

Sergio
Giannitelli

Agronomist
Supply chain certifier

Regione Lombardia

UIA URBAN INNOVATIVE ACTIONS
The Urban Lab of Europe !

Comune di Milano

PTP SCIENCE PARK

Camera di Commercio Frosinone

REGIONE LAZIO


ALIMENTA 2TALENT
HAI UN' IDEA NEL SETTORE DELL' AGROALIMENTARE E DELLE SCIENZE DELLA VITA?
Cerchiamo aspiranti imprenditori provenienti da tutto il mondo che vogliano far crescere le loro idee!
PARTECIPA ALLA CALL ALIMENTA 2 TALENT
Invia il tuo progetto d'impresa dal 17 giugno al 5 settembre 2014 su www.alimenta2talent.eu
ENTRA NELL' ALIMENTA ACCELERATING PROGRAM
I vincitori accederanno all'Alimenta Accelerating Program che trasforma le idee in business
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FAI DECOLLARE IL TUO BUSINESS
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*leggi attentamente il regolamento presente sul sito: www.alimenta2talent.eu
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VINCITORE ALIMENTA 2TALENT 2014
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QUOMI
VINCITORE ALIMENTA 2TALENT 2014
ECO-AEROGEL
VINCITORE ALIMENTA 2TALENT 2014
MYFOODY

Il Sole 24 ORE
STREAM24

ALIMENTA 2TALENT

PRESS REVIEW

TRIWÙ

Products & Services

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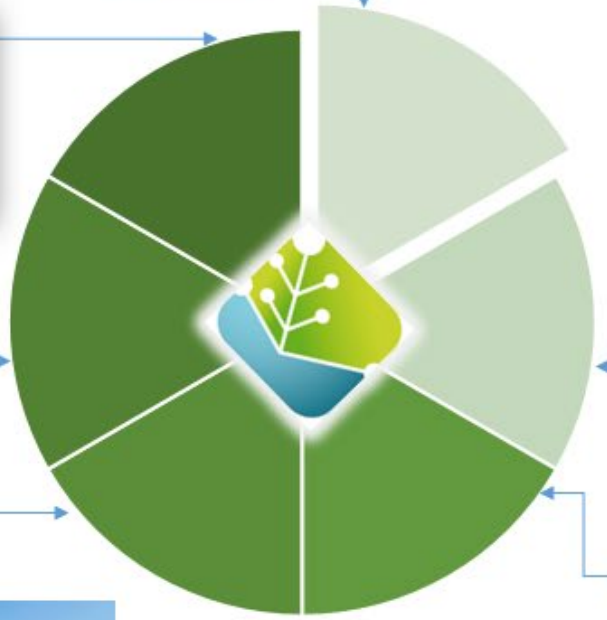
Business Intelligence Market Analysis

Facilitated finance

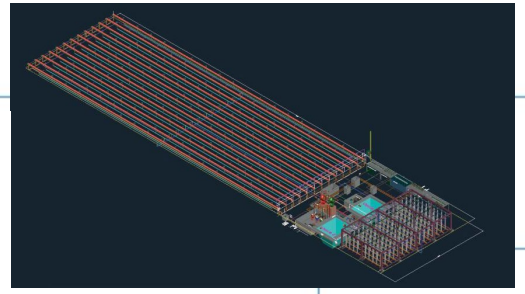
- ✓ Bandi (PSR, Mise, Ismea)
- ✓ Business Plan

Intake / Assesment



Facilitated finance

CAD Design



IoT

Installation

RAS Soilless Agriculture

Aquaponics vs Hydroponics

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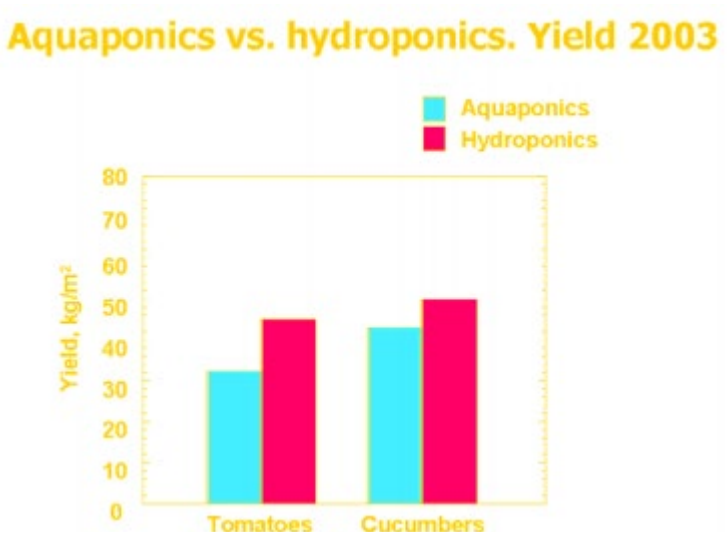

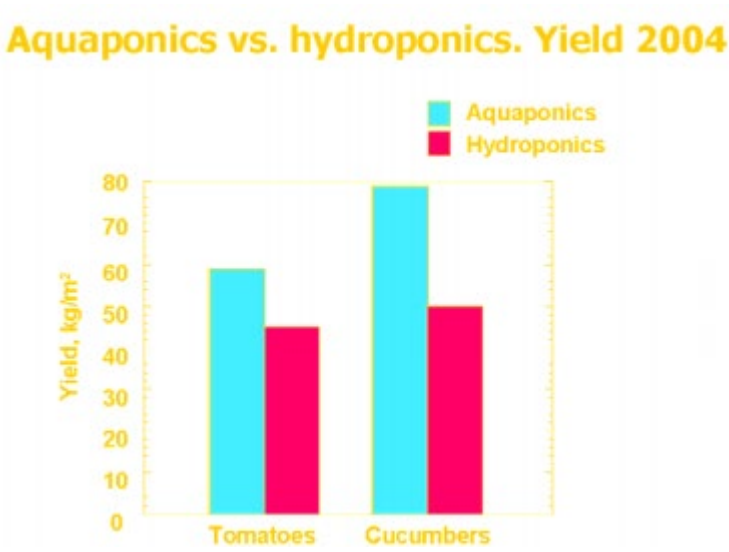

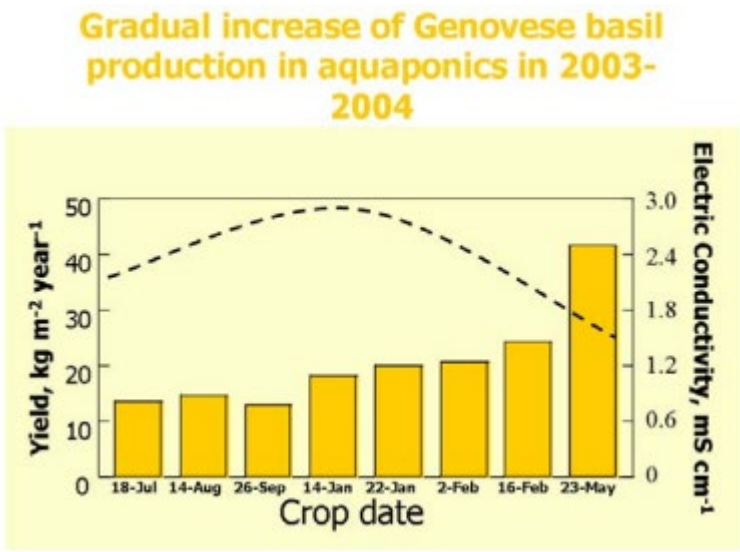

(Dr. Nick Savidov, of the Crop Diversification Center South, Alberta Agriculture Food and Rural Development at Brooks, Alberta, Canada report in the Aquaponics Journal, 2nd Quarter, 2005)

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Batteri Trasformano Nitriti N02 in Nitrati N03

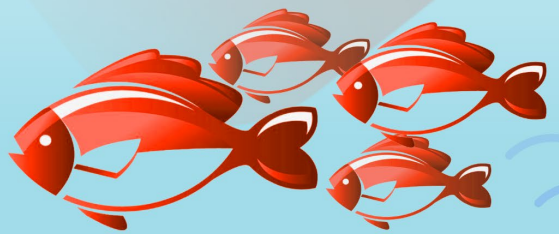
Anidride Carbonica

Fitodepurazione

Nutrienti

Ossigeno

Batteri trasformano l' organico in Ammonio NH4, NH3



Dr. Nick Savidov, of the Crop Diversification Center South in Alberta (CAN)

AGRICOLTURA 2.0 PUNTO
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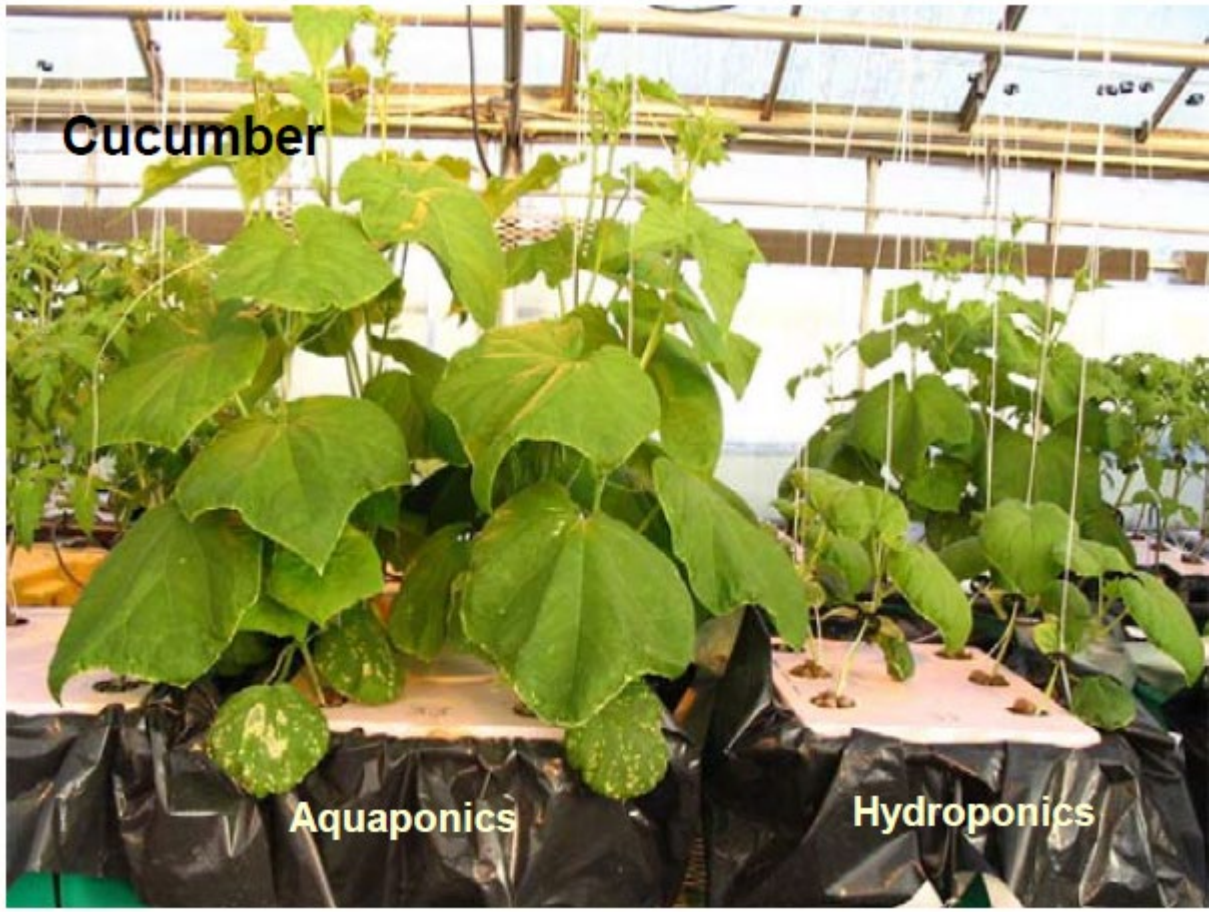

Dr. Nick Savidov, Crop Diversification Center South, Alberta Canada

(Agriculture Food and Rural Development at Brooks, Alberta, Canada report in the Aquaponics Journal, 2nd Quarter, 2005)

25 Days

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Davide Balbi,
Agricoltura 2.0
Cassino (FR), Italia

51 Days

Davide Balbi,
Agricoltura 2.0
Cassino (FR), Italia

Production Agricoltura2.0

AGRICOLTURA 2.0 punto
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The European Union point of view

AGRICOLTURA 2.0 punto
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EUROPEAN PARLIAMENT

Ten technologies which could change our lives

Potential impacts and policy implications

8. Aquaponic systems

As the world's population continuing to expand rapidly, developing innovative and sustainable food sources is a key priority for Europe. How will spatial planning cope with greater use of aquaponics?

Fonte: https://eur-lex.europa.eu/resource.html?uri=cellar:da01658f-07b2-431f-9629-e76b9efb985a.0007.03/DOC_1&format=PDF

The ONU's point of view

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SUSTAINABLE DEVELOPMENT GOALS

2 ZERO HUNGER

L'acquaponica come possibilità di aumentare la produzione agricola e **combattere la fame**

3 GOOD HEALTH AND WELL-BEING

Produciamo verdura e pesce, due **alimenti sani** e cardine della Dieta Mediterranea

8 DECENT WORK AND ECONOMIC GROWTH

Il nostro sistema innovativo contribuisce al progresso economico e al **miglioramento delle condizioni di lavoro**

12 RESPONSIBLE CONSUMPTION AND PRODUCTION

L'acquaponica è una forma di **agricoltura circolare**, dove non ci sono prodotti di scarto perché tutto viene riutilizzato

13 CLIMATE ACTION

Utilizziamo il **90% di acqua in meno** rispetto ai sistemi tradizionali, non produciamo CO2

15 LIFE ON LAND

Coltivando solo una piccola parte del nostro terreno, ne abbiamo dedicata un'altra alla **rinaturalizzazione**

Problems & Solutions

Commercial fishing system Collapse

- Collapse is defined as the point where a **fish population** is so low that it **cannot regenerate** its numbers to further support commercial fishing. (**source: FAO**).

  The sea fish population is collapsing, we are creating a project to adapt sea fish to fresh water

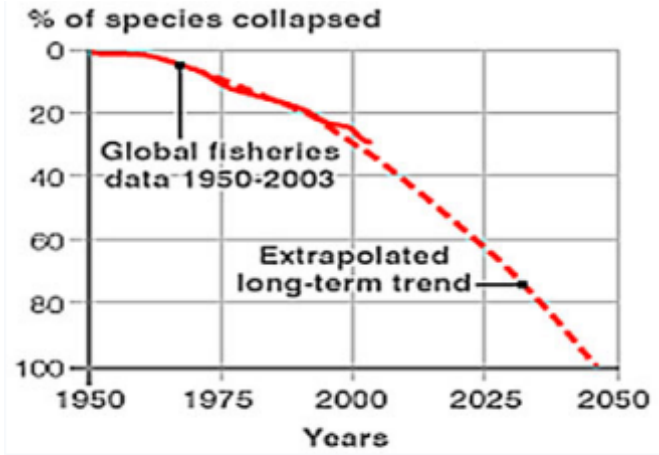


Figure 7: Collapse of Seafood Species 1950 to 2003 (UN FAO, 2011a)

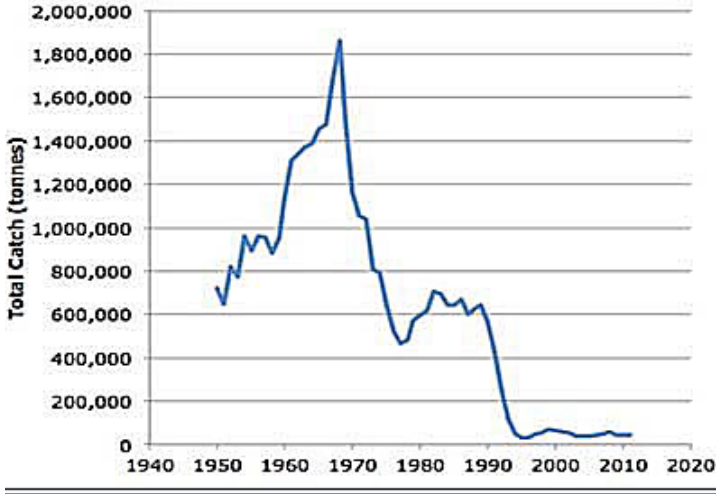


Figure 8: Collapse of Northwest Atlantic Cod (UN FAO, 2012)

Between 1950 and 2003, about 30% of the world's fish species collapsed.

United Nations: in 2050 the world could face the collapse of almost 100% of the commercial fishing of fish in the open sea.

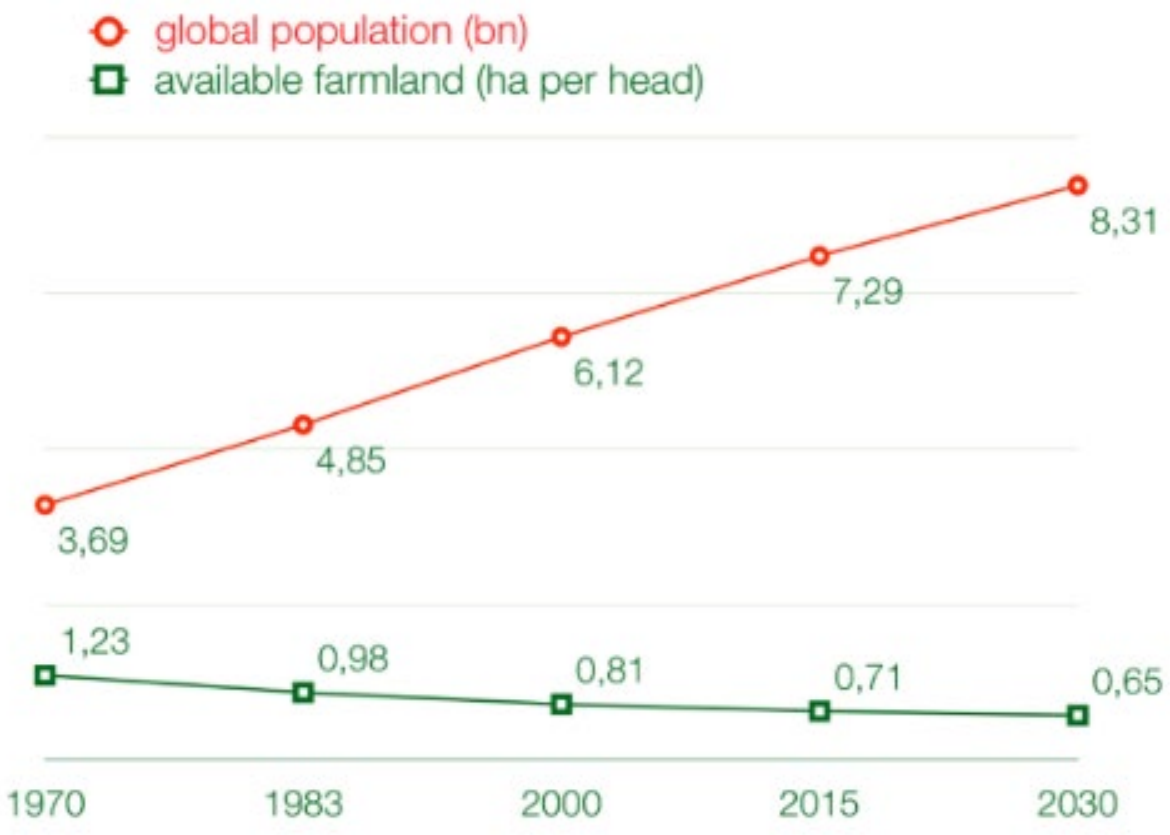
The Northwest Atlantic Cod provides a good example

Population Vs Land Ratio

Popolazione globale rispetto alla terra disponibile per la coltivazione

La popolazione mondiale ha raggiunto gli 8 miliardi nel 2020 e raggiungerà i 9 miliardi entro il 2050.
(**Fonte**: **United Nations**)

In altre parole, la popolazione mondiale cresce di 80 milioni di persone ogni anno. Il risultato: un continuo e repentino aumento della domanda di cibo.



Always work in an upright position

- Maximum Labour **efficiency**
- **8m** of rows, up to **800 plant** per **1 square meter** on the ground
- **Less space = energy saving**

Field VS ZIP Towers

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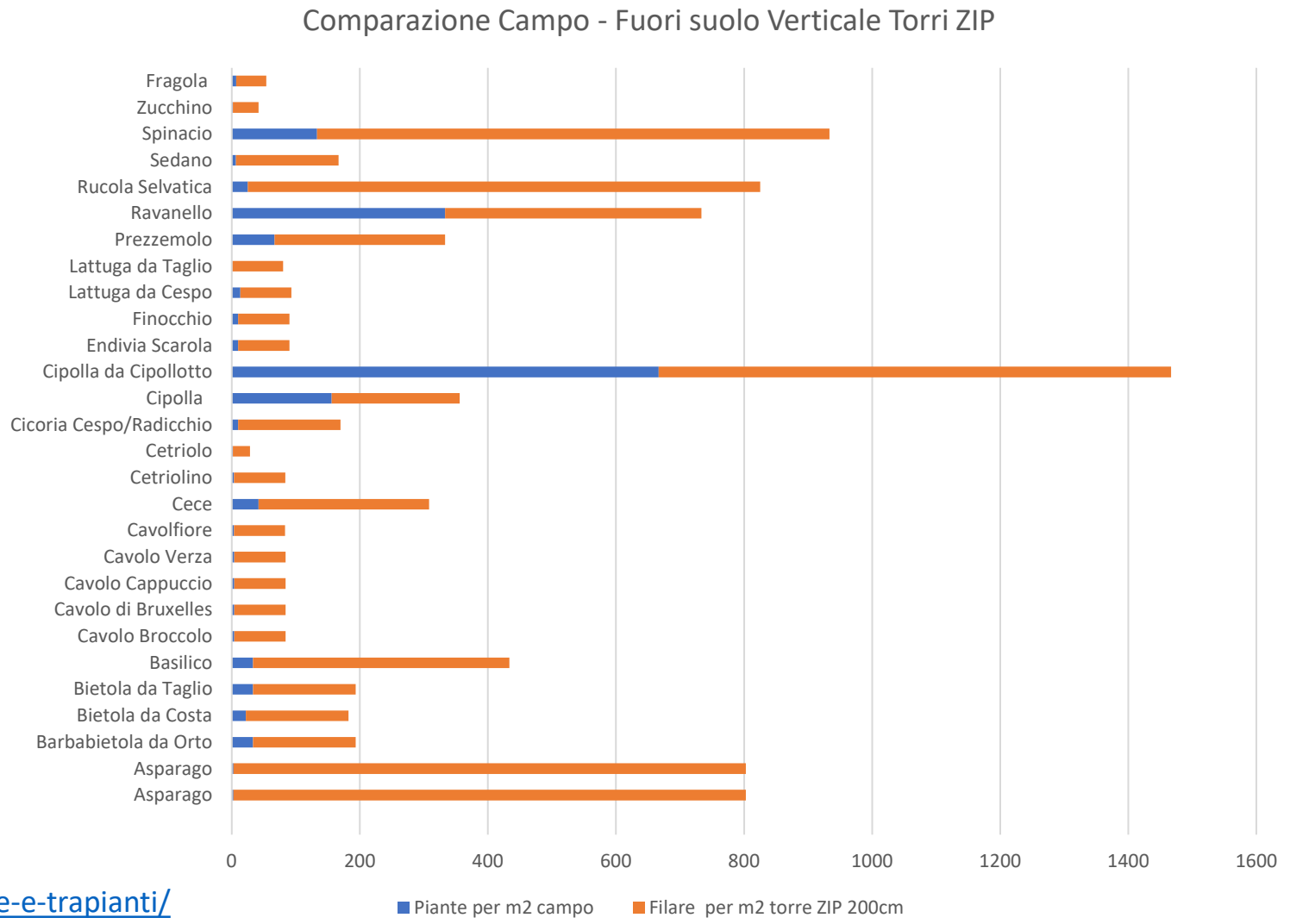
Varietà	Piante per m2 campo	Filare per m2 torre ZIP 200cm
Asparago	3	800
Asparago	3	800
Barbabietola da Orto	33	160
Bietola da Costa	22	160
Bietola da Taglio	33	160
Basilico	33	320
Cavolo Broccolo	4	80
Cavolo di Bruxelles	4	80
Cavolo Cappuccio	4	80
Cavolo Verza	4	80
Cavolfiore	3	80
Cece	42	267
Cetriolino	4	80
Cetriolo	2	27
Cicoria Cespo/Radicchio	10	160
Cipolla	156	200
Cipolla da Cipollotto	667	800
Endivia Scarola	10	80
Finocchio	10	80
Lattuga da Cespo	13	80
Lattuga da Taglio	0	80
Prezzemolo	67	267
Ravanello	333	400
Rucola Selvatica	25	800
Sedano	7	160
Spinacio	133	800
Zucchino	2	40
Fragola	7	47



Fonte: https://www.lortolano.com/prodotti/tabelle-delle-semine-e-trapianti/

Field VS ZIP Towers

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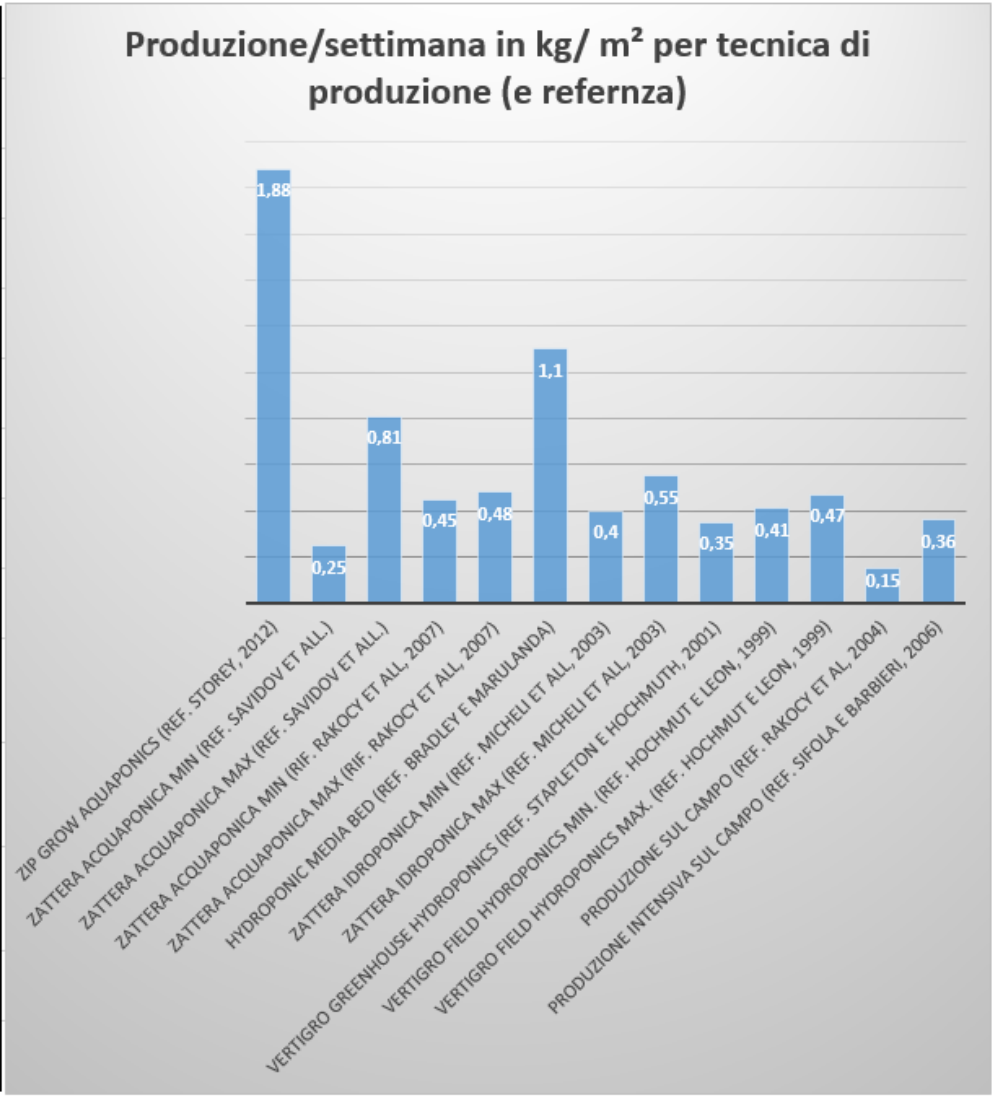
Tecnica	Produzione/settimana (kg/ m²)
Zip grow aquaponics (Ref. Storey, 2012)	1,88
Zattera acquaponica Min (Ref. Savidov et all.)	0,25
Zattera acquaponica Max (Ref. Savidov et all.)	0,81
Zattera acquaponica Min (Rif. Rakocy et all, 2007)	0,45
Zattera acquaponica Max (Rif. Rakocy et all, 2007)	0,48
Hydroponic media bed (Ref. Bradley e Marulanda)	1,1
Zattera idroponica Min (Ref. Micheli et all, 2003)	0,4
Zattera idroponica Max (Ref. Micheli et all, 2003)	0,55
Vertigro greenhouse hydroponics (Ref. Stapleton e Hochmuth, 2001)	0,35
Vertigro field hydroponics Min. (Ref. Hochmut e Leon, 1999)	0,41
Vertigro field hydroponics Max. (Ref. Hochmut e Leon, 1999)	0,47
Produzione sul campo (Ref. Rakocy et al, 2004)	0,15
Produzione intensiva sul campo (Ref. Sifola e barbieri, 2006)	0,36



BASILICO (paragone tra resa di torri Zip e altre tecniche di coltivazione)

1.88 kg/m2 di basilico a settimana

Vs

0.15 kg/m2 della coltivazione a terra

NICKEL TESTED
< 0.00001%

NICHEL FREE

NICKEL FREE
NON-TOXIC • NON-ALLERGIC

These extremely toxic **organochlorine** (OC) and **organophosphorus** (OP) **kill our soils by slaughtering the symbiotic bacteria** and fungi that promote nutrient uptake in plants. Furthermore, **they inactivate the critical enzyme systems** within plant roots that are involved in mineral uptake and **destroy the soil microorganisms** needed to create the organic-mineral complexes that naturally replenish the soil.

Institute of Biochemistry
Univ. of Texas in Dallas

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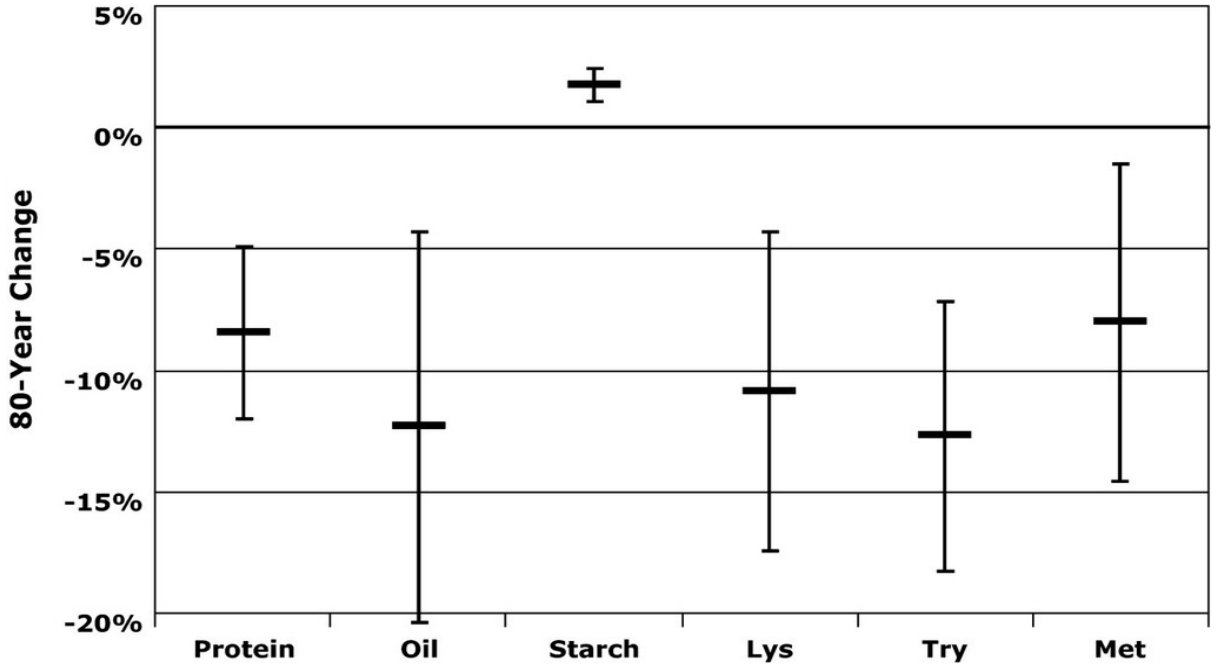
An 80-year decline in the soil in concentrations of proteins, oil and three amino acids (from 8% to 13%) and the corresponding increase in starch (2%) has been calculated

- All changes are statistically significant (P <0.02 to <0.001)
- Although these parallel studies are limited in number and scope, they show uniformly inverse associations between yield and nutrient concentrations for every nutrient studied so far (other than carbohydrates) - two minerals in broccoli; six minerals in grain, plus protein, oil; and three amino acids in corn. These four studies suggest that genetic dilution effects may be common when selective breeding successfully increases yields.



http://saveoursoils.com/userfiles/downloads/1351255687-Changes%20in%20USDA%20food%20composition%20data%20for%2043%20garden%20crops,%201950-1999.pdf

Nutrients in lands grown vegetables

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Kushi Institute: 1975 to 1997

Levels in 12 fresh vegetables

- Calcium - 27%
- **Iron - 37%;**
- Vitamin A - 21%
- Vitamin C - 30%

British Food Journal 1930 to 1980

Levels in 20 fresh vegetables

- Calcium - 19%;
- Iron - 22%
- Potassium - 14%

https://www.sciencedirect.com/science/article/pii/S0889157516302113?via%3Dihub

JamaJama Internal Medicine Analysis 2009 - 2016

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70,000 volunteers

- 4 groups from 100% no organic food, 50% no organic food… as far as 100% organic

- In 2016 there have been…

  1,340 new cases of cancer

Organic Group results

- -25% cases in the **organic group**
- -34% breast **cancers**
- **-76% lymphomas**

"An epidemiological study alone cannot provide definitive evidence of a cause and effect relationship, and more research will be needed," says Kesse-Guyot, co-author of the research.

Water and Aquaponics

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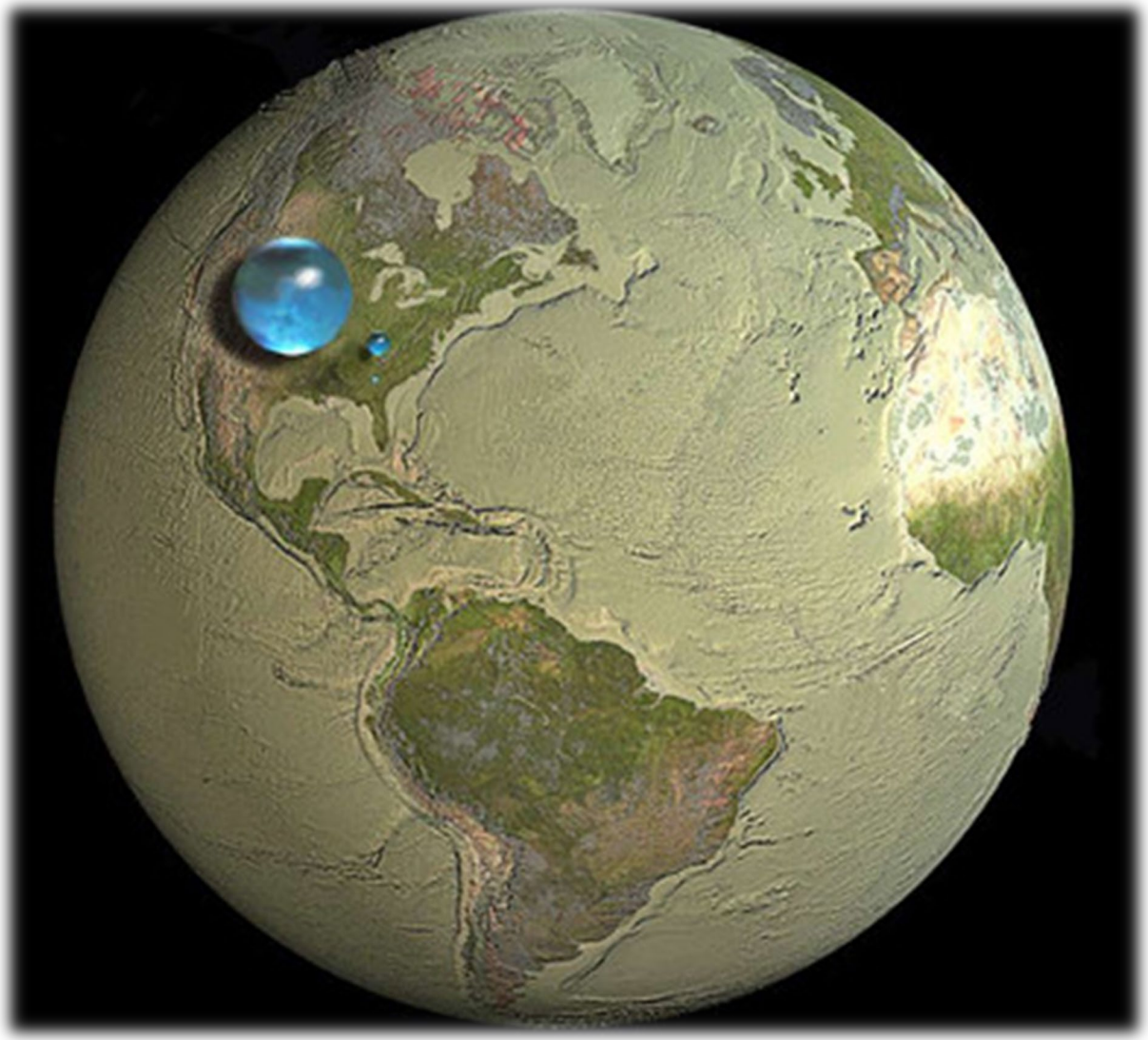
- 97,5% Ocean water
- 2,5% Fresh water



-90%

Water in Agricolture

What we eat ?

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- **120 species** of cultivated plants provide **90% of the food**
- **12 plant species** and 5 animal species **supply more than 70%** of the food
- **Only 4 plant species** (potatoes, rice, corn and wheat) and 3 animal species (cattle, pigs and chickens) **provide >50%.**

Goals

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- **Keeping** rare and endangered **agro-biodiversity alive**
- **Research, conserve and reproduce** food plants from local**, ancient and free-pollinated varieties**
- **Limiting the genetic and cultural erosion of biodiversity**




Research & Development

R&D – Patents

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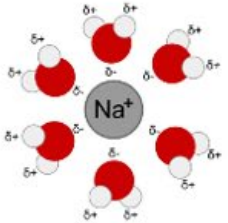
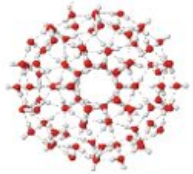
Oxigen 0,1cm sec

PATENTED BREVETTATO

Solubility of nutrients





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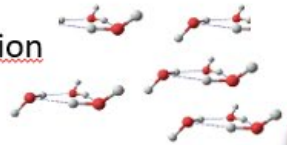
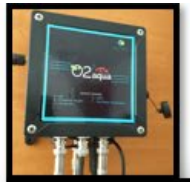




PATENTED BREVETTATO

REMOTE SENSORS
A = NO3- (Nitrate)
B = NO2- (Nitrite)
C = Na+ (Sodium)
D = NH4+ (Ammonium)
E = References
F = Soil/Water Temperature

REMOTE SENSORS
A = pH
B = Dissolved Oxygen
C = Conducitivy
E = ORP
F = Soil/Water Temperature

REMOTE SENSORS
A = Ca2+ (Calcium)
B = Cl- (Chloride)
C = Mg2+ (Magnesium)
D = K+ (Potassium)
E = References
F = Soil/Water Temperature

REMOTE SENSORS
B = Solar Radiation
F = Temperature + Humidity + Pressure

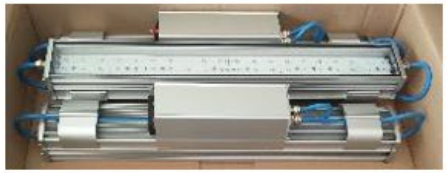
O2aqua

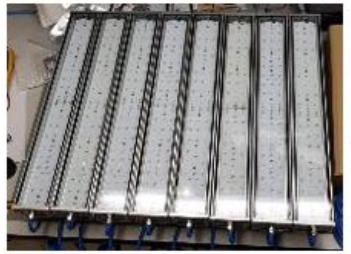
GROWTH SUBSTRATE / BIOFILTER

- ✓ Rooting substrate
- ✓ BioFilter
- ✓ De solidifier
- ✓ Water aerator

NFT, GROW BED, VERTICAL TOWER

LED LIGHT





R&D – to be (AI)

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Light

Video /Picture

O2aqua

Nutrients

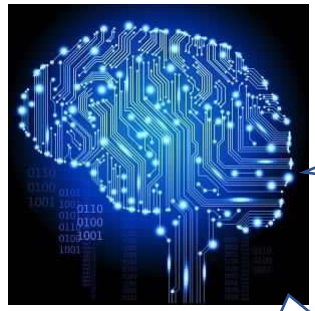
Nitrogenous Cycle

Physical Chemical water

Ambient

Cultivar Selection

Nutrient's Formula



System management

comparison of phytopartologies with digital databases

Services

AGRICOLTURA 2.0 punto
ECOLOGIA APPLICATA

Light

Video /Picture

O2aqua

Nutrients

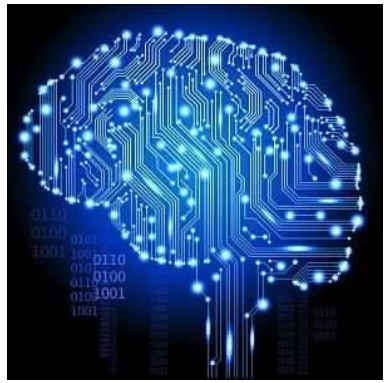
Nitrogenous Cycle

Physical Chemical water

Ambient

Blockchain Technology

AI



R&D – collaborations

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FEDERAZIONE NAZIONALE BIOFARMACEUTICA C.N.L.

crea Consiglio per la ricerca in agricoltura e l'analisi dell'economia agraria

Technical comparison of Cultivation

Fish stock adaptation from salt water to fresh water for organic farms

IZS TERAMO

ENEA

Use of patents
Research and development

Consiglio Nazionale delle Ricerche

Research new materials
Substrate development
Optical fish stock monitoring

Business Model

Installations "Turn key"

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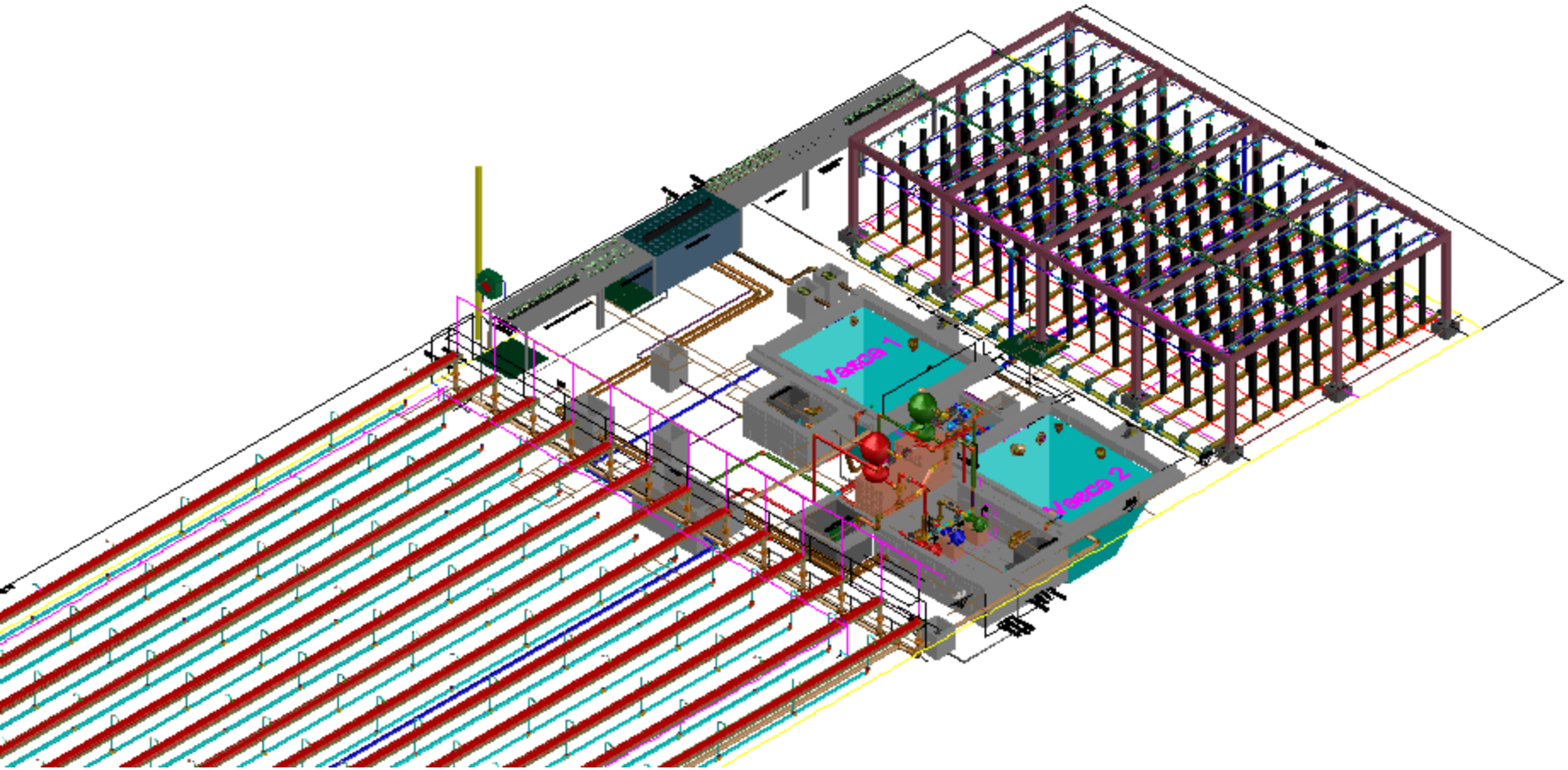

Farming on Demand – SEED TO FORK

Coltiva in Italia

A20 – Farmers Network




Cultivation on behalf of third parties

- Rental of plant seats
- Ownership of plant seats

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Market

Acquaponic's MArket

- ***$1.9 MILIARDI in 2028***
- ***2021-2028:***

  a CAGR of 12,60%

Fonte: https://brandessenceresearch.com/agriculture/aquaponics-market-industry-analysis

Grazie

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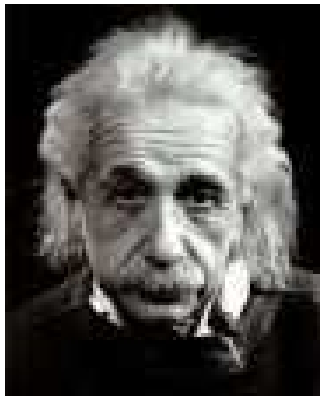
Only who are so foolish, as to think to change the world, really change it.



Albert Einstein

ImpattoZero S.r.l.

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Sede Legale:

Via Casilina sud-Km 141,700 – Cassino

Tel.: 0776 31 39 26

Sede Operativa:

Via Casilina sud-Km 144,500 – Cassino

Via Albert Einstein, Lodi (PTP Science Park)

www.agricoltura2punto0.it