FARMING'S GOT TALENT!

*VOCATIONAL EDUCATION AND **TRAINING** FOR AGRICULTURE IN TRANSITION*

Session 2

Vocational schools preparing the next generation of high-skilled agricultural professionals

Pannecoucque Nick
Provincial Technical Institute (PTI), Kortrijk (Belgium)

European Commission

Table of content

- Introduction
- What is **aquaponics**
- How do we **implement** aquaponics in our school?
- What are our **challenges** with this topic?
- How do we aim to tackle those challenges?

Provincie West-Vlaanderen
Door mensen gedreven
Ondernemen. Het zit in ons.

Campus Technics & Design

Campus Science & Green

European Commission

Provincie West-Vlaanderen
Door mensen gedreven
Ondernemen. Het zit in ons.

Educational offer

- General education
- VET education
  - Biotechniscal sciences
  - Animal husbandry
  - Horticulture
  - Floristry
  - Gardening and maintenance

Campus Science & Green

European Commission

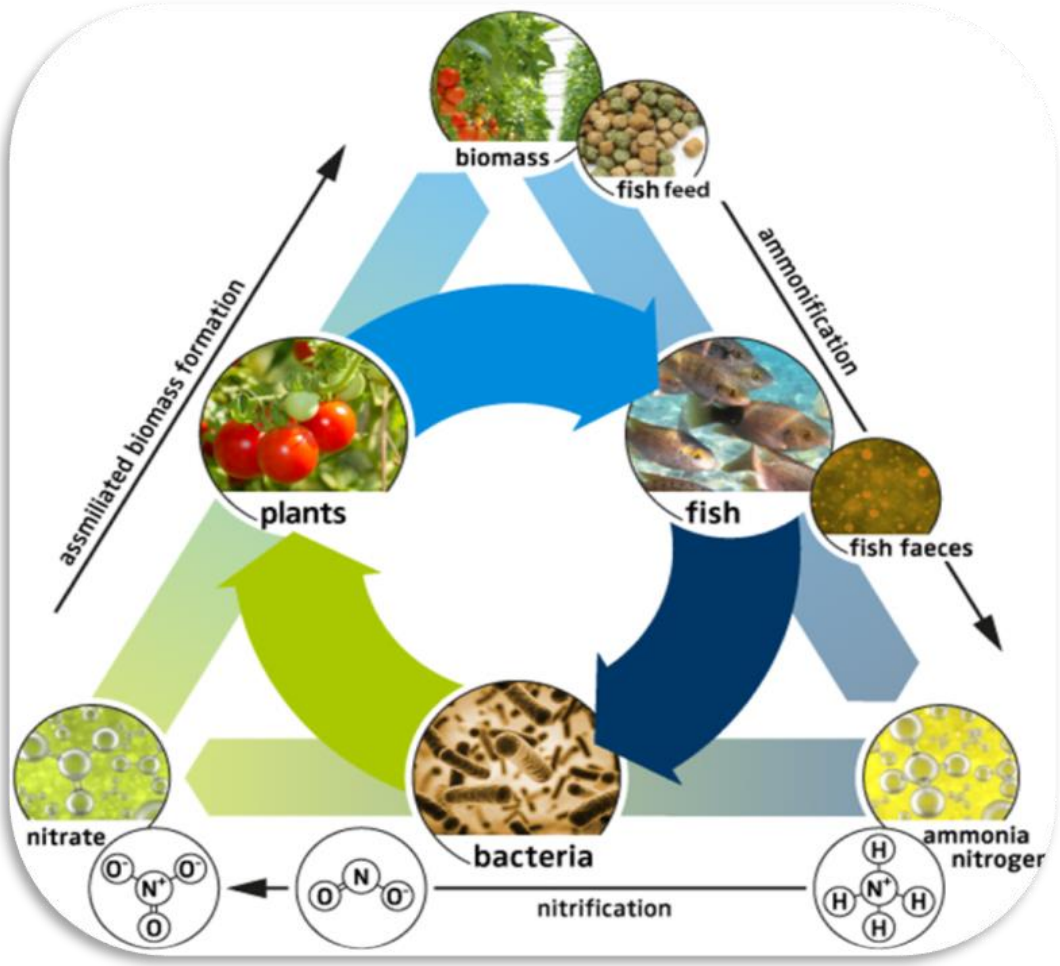


Figure: Delaide B., Goddek S., …, Jijakli H., 2015. Aquaculture Engineering

What is aquaponics?

Interaction between plants, fish and micro-organisms

Lesser impact on the environment

How do we implement aquaponics in our school?

How do we implement aquaponics in our school?

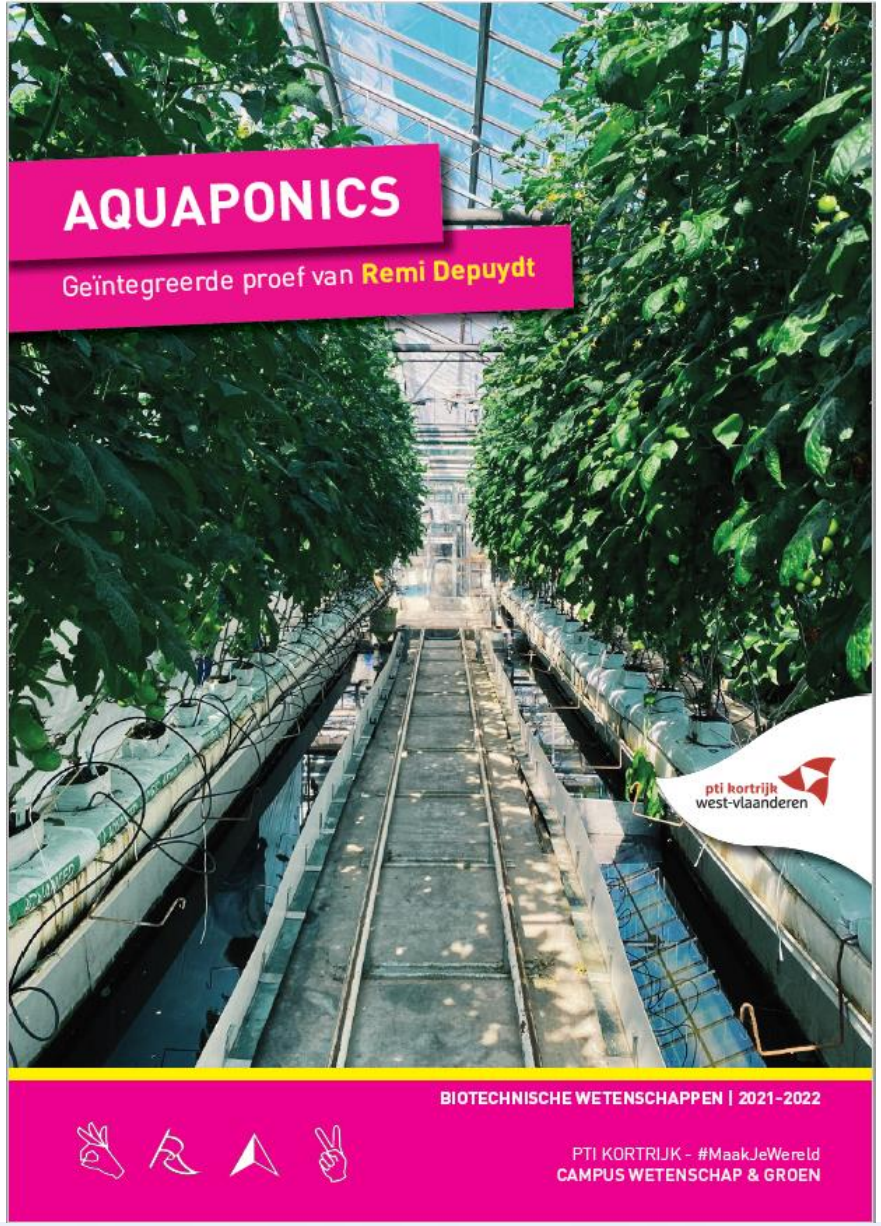
Goede tomatenplant

Tomatenplant zonder P

How do we implement aquaponics in our school?

1. **Applied laboratory research**

- Dissection of crayfish
- Water quality parameters
- Nitrate determination by spectrometric analysis
- **Determination of light stress on plants**
- Salinity determination by precipitation titration



How do we implement aquaponics in our school?

1. **Applied laboratory research**

2. **Integrated final work**

1. AQUAPONIC TECHNOLOGY

1.1 Introduction to aquaponic technology

Als gevolg van de snelle bevolkingsgroei, de toegenomen voedselbehoefte en de verstedelijking neemt de hoeveelheid landbouwgrond tegenwoordig snel af en zijn onze oceanen overbevist. Om aan de toekomstige vraag naar voedsel te kunnen voldoen, is er behoefte aan innovatieve, ruimtebesparende en ecologische voedselproductietechnologieën. Aquaponics is een polycultuur die bestaat uit twee technologieën: aquacultuur en bodemloze teelt van groenten. Het primaire doel van aquaponics is het hergebruiken van de voedingsstoffen in visvoer en visuitwerpselen om gewassen te kweken. De integratie van twee systemen in één systeem verwijdert enkele van de niet-duurzame factoren van het onafhankelijk van elkaar runnen van aquacultuur en hydrocultuursystemen.

Keyword	Description
Polyculture	
Aquaculture	
Hydroponics	

How do we implement aquaponics in our school?

1. **Applied laboratory research**
2. **Integrated final work**
3. **Theoretical courses**

What are our challenges with this topic?

Aquaponics Curriculum

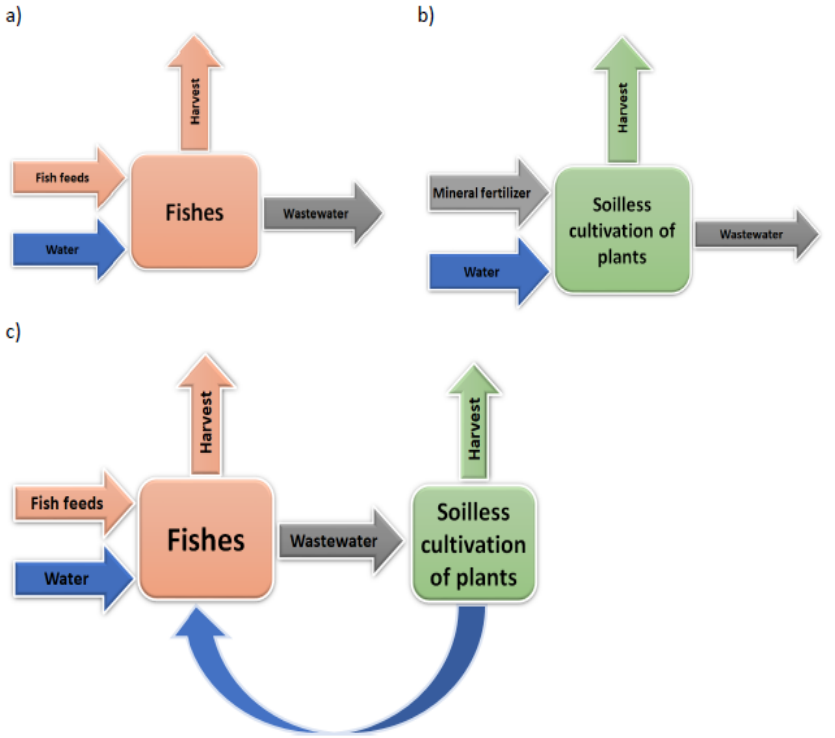
The Aquaponics Curriculum is intended for tertiary level teachers who want to introduce basic aquaponics to their students. The student workload for the entire curriculum is 150 hours, corresponding to 5 ECTS, and is divided into 15 modules:

- Module 1: Aquaponic technology
- Module 2: Aquaculture
- Module 3: Fish anatomy, health and welfare
- Module 4: Fish feeding and growth
- Module 5: Nutrient water balance
- Module 6: Hydroponics
- Module 7: Plant varieties
- Module 8: Integrated pest management
- Module 9: Monitoring of parameters
- Module 10: Food safety
- Module 11: Scientific research methods
- Module 12: Design and build
- Module 13: Urban agriculture
- Module 14: Vertical aquaponics
- Module 15: Social aspects of aquaponics

1. AQUAPONIC TECHNOLOGY

1.1 Introduction to aquaponic technology

Today, as a result of rapid population growth, increased food requirements and urbanization, the amount of agricultural land is rapidly declining and our oceans are overfished. To meet future demands for food, there is a need for innovative, space-saving, and ecological food production technologies. Aquaponics is a polyculture (integrated multi-trophic production system) consisting of two technologies: aquaculture (a fish farm) and soil-less (hydroponic) cultivation of vegetables. The primary goal of aquaponics is to reuse the nutrients contained in fish feed and fish faeces in order to grow crops (Graber & Junge 2009; Lennard & Leonard 2004; Lennard & Leonard 2006; Rakocy *et al.* 2003). The integration of two systems into one removes some of the unsustainable factors of running aquaculture and hydroponic systems independently (Somerville *et al.* 2014).



How do we aim to tackle those challenges?

PITO Stabroek, Belgium

Erasmus+

IMPACT
ERASMUS+ 2020-2022

Lycée de Coulogne, France

European Commission

SABANA
Sustainable Algae Biorefinery for Agriculture aNd Aquaculture

SPAIN

Erasmus+

#FarmingSkills

European Commission

www.smart-aquaponics.com

Data Management:

yncréa

Modeling:

LIÈGE université Gembloux Agro-Bio Tech

Pilot testing:

Industrial:

AQUA4C

pcg

Sensing:

howest

01100111
01110010
00100011
00110001
00001010
00100000

Small professional:

Atelier

Education:

Province West-Vlaanderen

Smart Interface & Serious Gaming:

VIGO UNIVERSAL

Education:

yncréa

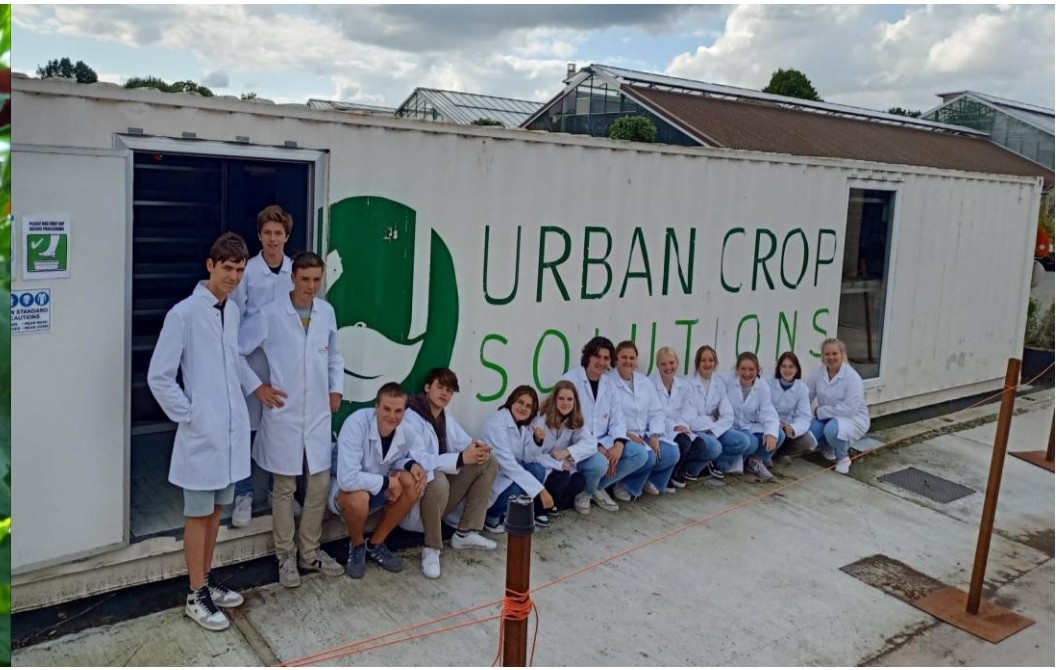
odisee HOGESCHOOL

Province West-Vlaanderen

UniLaSalle

LIÈGE université Gembloux Agro-Bio Tech

Thank you kindly for your attention!



PTI – Provincial Technical Institute Kortrijk
Condédreef 10 - 056 22 00 13 – info@pti.be

Contact:
nick.pannecoucque@pti.be

European Commission