AnKo Projects
Spirulina microfarm

Work in progress

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AnKo Projects

- Specialist in waterpurification for farms, households, restaurants, campings, swimming ponds etc

AnKo Projects

- Since 2014 active in algae production
  - 2013 pilotcase in a horticultural company
  - 2014 AnKo Projects took over the pilotplant
  - 2014 feasibility study and theoretical blue print of a Spirulinaplant for Flanders + literature study on the properties of Spirulina in human nutrition

AnKo Projects

- Since 2014 active in algae production
  - 2016 Market research UA on Spirulina based food products

Karline (28)

Onthaalmedewerkster, metaalverwerkend bedrijf (4/5de)

Gepassioneerd triatlete

Koos voor een 4/5de betrekking met regelmatige uren zodat zij haar trainingsschemas hieromheen kan plannen

AnKo Projects

- Since 2014 active in algae production
  - 2015-2017 Micro-NOD
    (cultivating on sidestreams of the foodindustry and first steps towards bioproduction + automation of harvesting and drying)

AnKo Projects

- Since 2014 active in algaeproduction
  - 2017-2018 Blauwe keten
    (looking for other waste streams in agriculture for bioproduction + testing and optimizing automation of harvesting and drying)

Interreg

EUROPESE UNIE

Vlaanderen-Nederland

Europees Fonds voor Regionale Ontwikkeling

AnKo Projects

- Objectives
  - Gain experience and lowtech laboratory for the cultivation of Spirulina and development of Spirulina based products and a market
  - Bioculture with use of secondary flows from agriculture and food industry with minimal input from external fertilizers
  - Continue working on cost reduction
  - Ecological footprint as low as possible

AnKo Projects

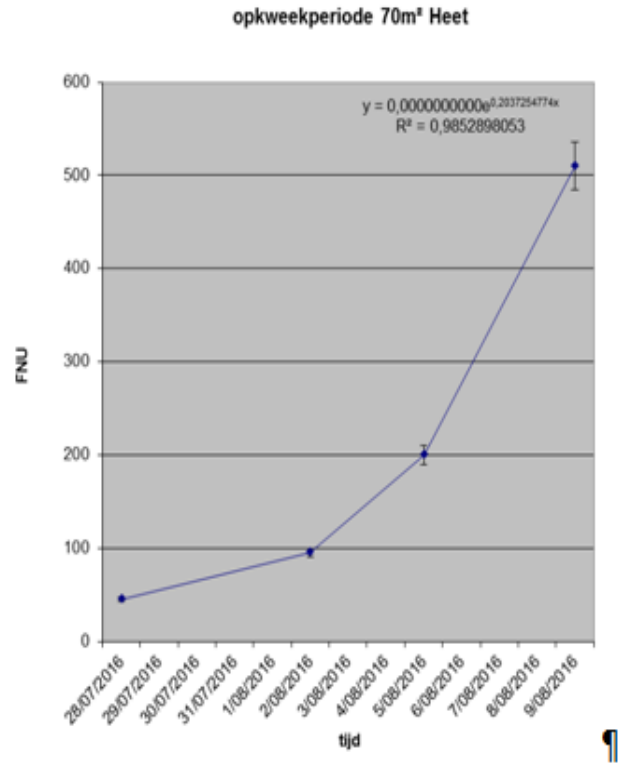
- Objectives
  - Visitors welcome as soon as everything is operational
  - Developing new functional food products
  - Spirulina as a powder, pills, processed in foodproducts
  - Selling the products over the internet and direct sales to consumers
  - Setting up new plants if the demand/market is big enough

Spirulina production

- Production of the medium
  - Collecting sidestreams with N (NH4), P, K, S and organic material
  - Mixing and nitrification
  - Sandfilter
  - Supplement fertilizer (Fe, NaCl, Na2CO3, …)
  - Grafting Spirulina

Spirulina production

- Production of the Spirulina
  - Pond 10 m² -> 70 m² -> 120 m²
  - Follow up temp, EC, turbidity (FNU), height of the water column, …
  - Harvesting between 500-1000 FNU (2 or 3 times à week)



Spirulina production

- Harvesting of the Spirulina
  - Filter of 1-2 mm
  - Drumfilter (filter Spirulina and rinse fertilizers from the paste)
  - Filterbag (10% dm)
  - Press (22% dm)

Spirulina production

- Harvesting of the Spirulina
  - Press paste to “spaghetties” in the dryer
  - Drying the Spirulina at about 30°C
  - Collecting dry mass from dryer
  - Milling the Spirulina to grains
  - Packaging in closed and dark bags

Challenges

- Biospirulina
  - Interpretation of the EU specifications different in Flanders then in other countries like Germany and Italy
  - Legislation use of sidestreams
  - Optimizing medium
  - Optimizing rainwater storage

Challenges

- Reduction of the production costs
  - Costs are too high in Flanders to be competitive with foreign countries (Asia, Hawaï, India, USA, …)
  - Optimizing the yield/m²
    (heating and lighting? Other system then open pond? Double plastic foil? Hybrid system? Indoor system? Influence on costs?)
  - Automisation of harvesting and drying
    (too much expensive manual labor; we've build an automated kind of RWD dryer but its not usefull for Spirulina)

Challenges

- Selling the Spirulina at a good price
  - Search for the right nichemarkets and ditribution channels
  - Introducing Spirulina in de foodindustry as a high quality ingrediënt for target groups (children, elderly people, sports enthusiasts, vegetarians and vegans, …

Challenges

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  - Developing good products based on Spirulina

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Challenges

- Reducing the ecological footprint
  - Purification and reuse of the wastewater
  - Optimizing energy consumption (dryer on solar boiler, …)
  - PV panels
  - Optimizing use of solar energy (monitoring and control of energy consumers in function of energy supply)
  - Energy storage?

Spirulina: cultivation with a future ? Cultivation for the future

- A lot of horticulture compagnies are looking for a new product
- Algae can have a future in Flanders but there is still a lot of work to do (lower the production costs and preparing a market that is big and stable enough)
- But we have to prepare that future by investing in research to optimize the cultivation and to work at a market today

Thanks for your attention!