



Commercial microalgae production for aquaculture application

Growing microalgae in Netherlands

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AlgaSpring

- 1.3 ha production facility
- *Nannochloropsis gaditana*
- Open ponds
- 10+ tons/year
- GMP+ / ISO22000



AlgaSpring

Premium quality aquaculture nutrition

NANNO STAR



Rotifer feed & enrichment diet
DHA/EPA

Excellent
growth
performance
for all rotifer
species and
strains

Rich in
proteins,
minerals and
vitamins

DHA/EPA ratio
3:1 from
microalgae



Why cultivating in the Netherlands?

- Availability of greenhouses
- Water expertise
- Good logistic and infrastructure
- High solar irradiance with relative low temperature

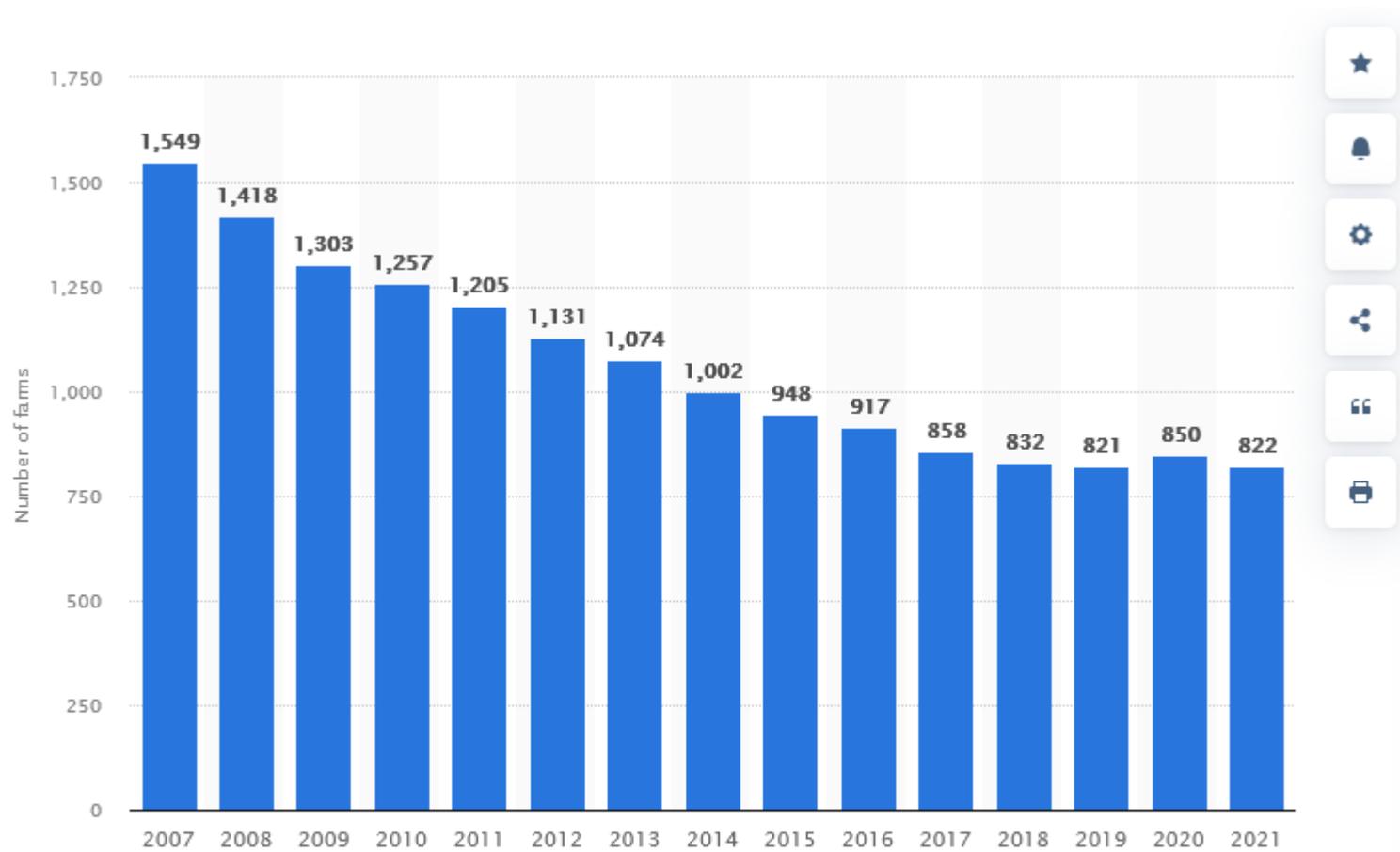




9300 ha of high-tech greenhouses

80% of agriculture energy consumption

Number of greenhouse horticulture farms in the Netherlands from 2007 to 2021



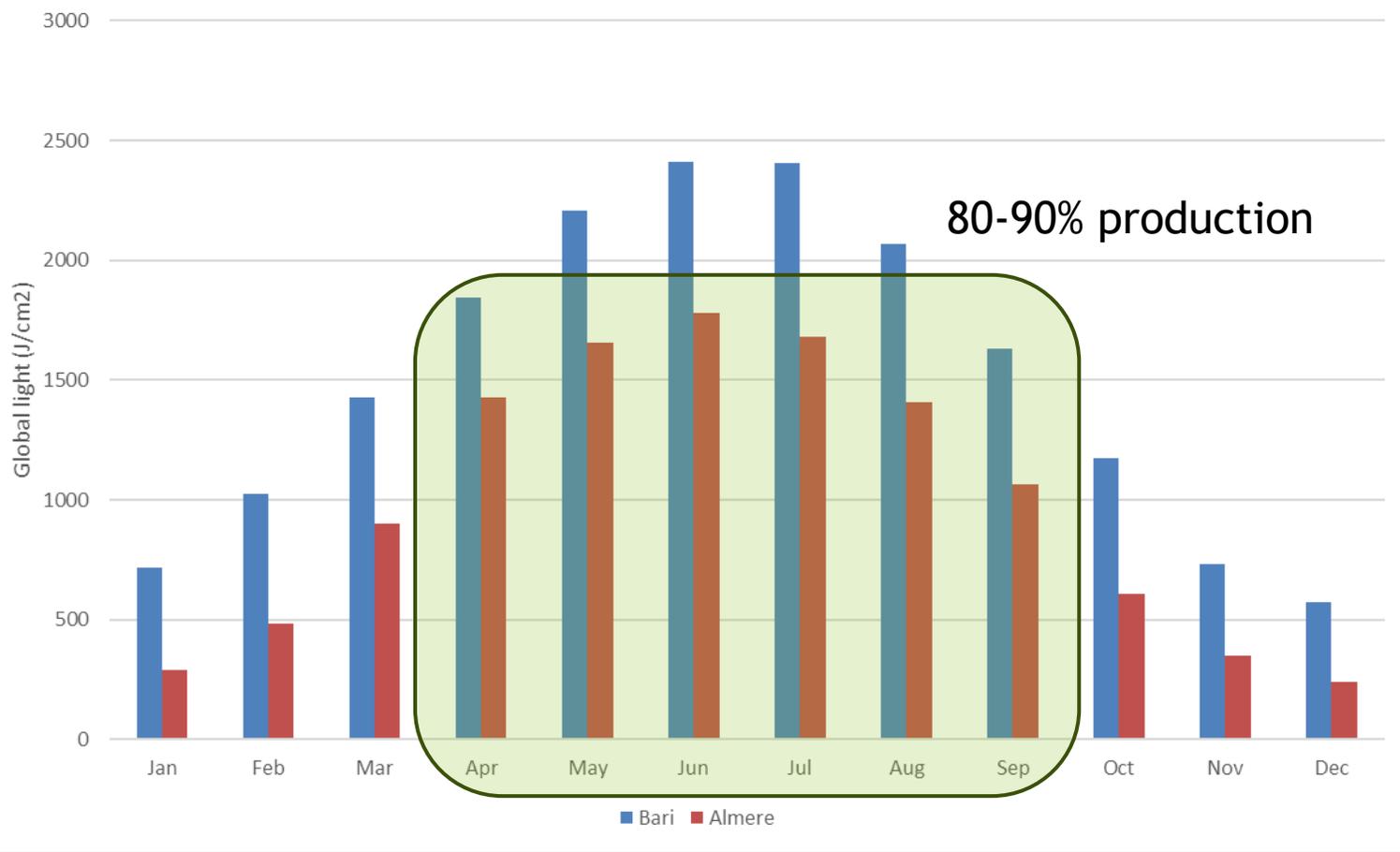
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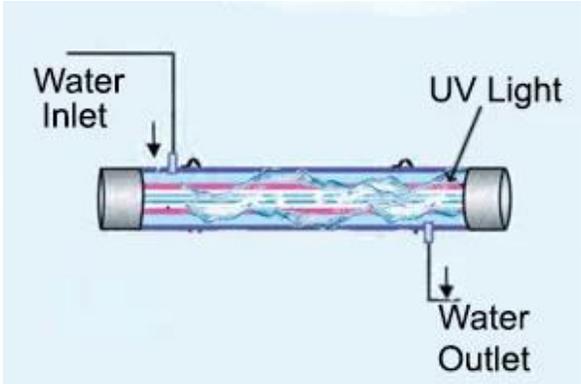
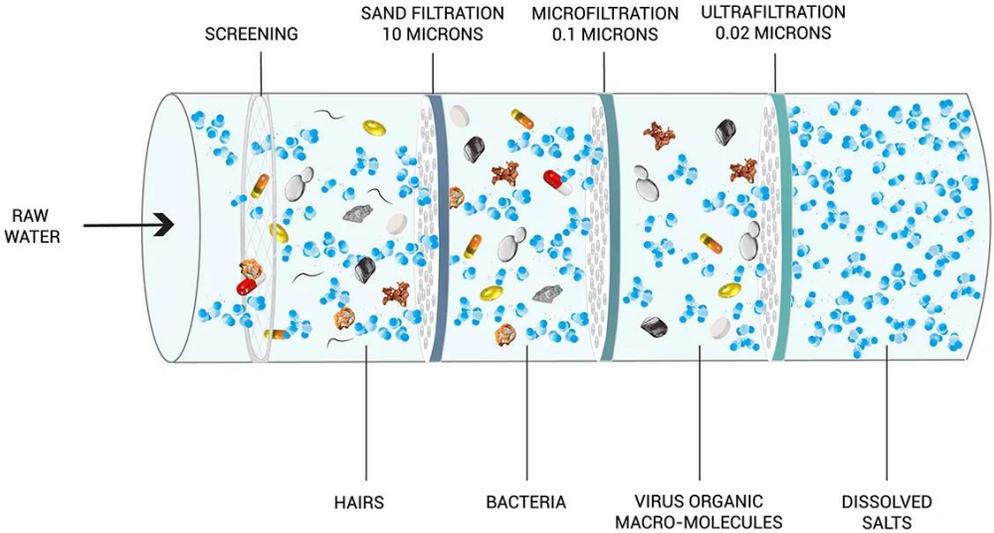
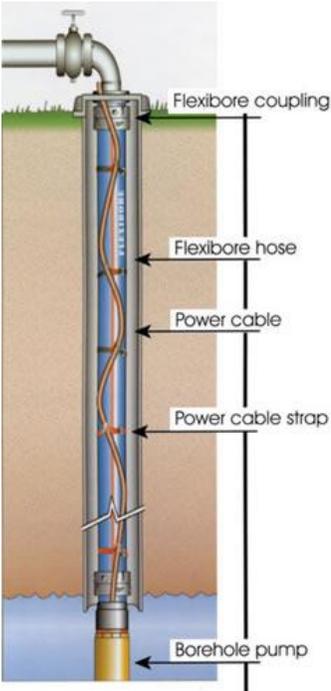


Energy independency & Sustainability



Water management

- 50 km from the North sea
- 60 m deep borehole water
- Pristine water
- Water filtration with UF
- Disinfection with UV



Pre-concentration with microfiltration membranes

- Concentration up to 2% dw with cross flow membranes
- Recycling rate of 80%
- Harvesting rate of 15%/d
- Culture stable for more than 2 months during trials



Conclusions

- Cultivating microalgae in the Netherlands is possible and successfully proved
- Availability of greenhouses is a plus to reduce CapEx
- Energy independency is a key factor to cut OpEx during high peak production
- Water management is crucial to avoid pathogens and increase biosecurity
- Pre-concentration with membranes is the way to sustainability



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