Dansk Algeplast

Who is Dansk Algeplast?

- Henrik Truelsen

- Electronic engineer

- Worked in production, mainly as a consultant

Challenges in bio-based recourses on land

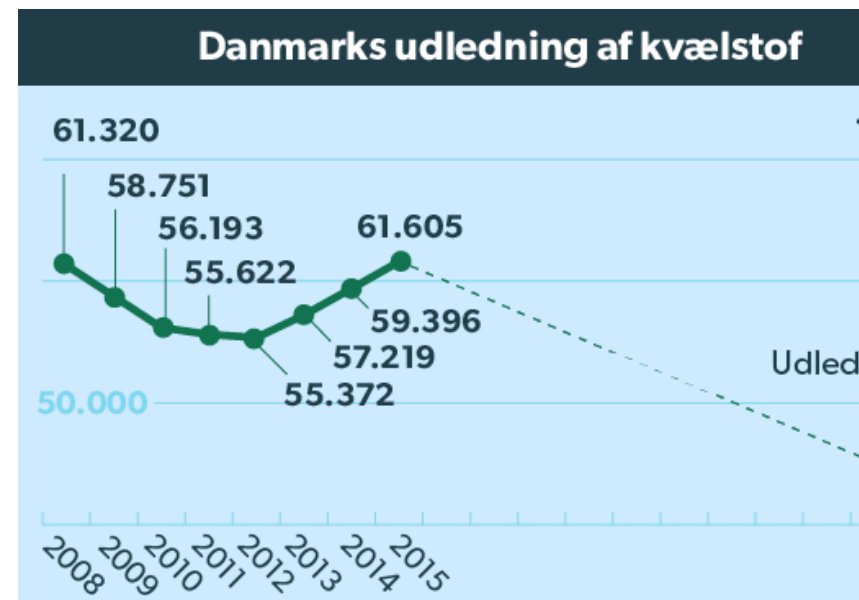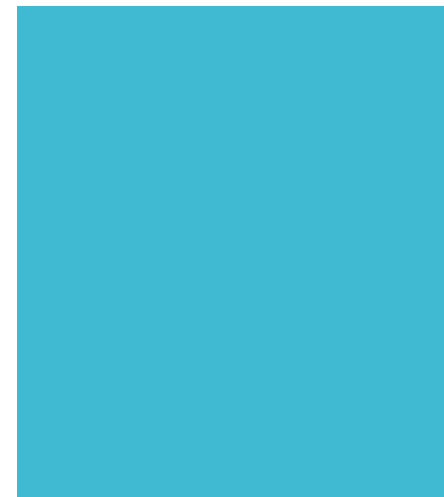- Agricultural areas

- Nutrient overload

- Lack of biodiversity

Why algae?

- Grows generally faster

- absorbs excess nutrients

- benefits marine ecosystems

- more water on earth, than land

- add only water

- We have too many nutrients in our waters.

- This feeds microalgae.

- An excess of this creates oxygen depletion and blocks the sun from reaching the ocean floor.

Danmarks udledning af kvælstof

61.320
58.751
56.193
55.622
61.605
59.396
57.219
55.372
50.000

2008 2009 2010 2011 2012 2013 2014 2015

Udled

Studies about our algae

- Out partner Dansk Tang has done measurements with Aarhus Universitet

- We are doing our own measurements, where we also measure the plastic - with Teknologisk Institut

Rererence	DM %	C	N	P	Ash	Crude pr	Total (cru	Carbo
		%dm	%dm	%dm	%dm	%dm	%dm	%dm
Average	18.60	30.90	3.60		11.75	20.54	9.53	54.
Conservative	18.6	27.1	1.1		19.8	13.5	1.3	42.
Optimistic	18.6	34.7	5.4		7.36	25.29	25	6

**TEKNOLOGISK INSTITUT**

AARHUS UNIVERSITET

Growth rates

- Dansk Tang has worked with DTU Aqua

- We have done own measurements

- Planning on building indoor facilities with Algecenter Danmark in Kattegat Centret

Table 1: ANOVA for the effects of temperature, light and interaction effects between the two factors for experiment I and experiment II. C (organic carbon); N (Nitrogen); C:N (weight ratio of C and N) and Chl a (Chlorophyll a).

Exp	Response	Factor	df	MS	F-Ratio	p-Value
I	Growth	Temperature	5	0.001	20.227	**0.000**
		Light	5	0.003	108.899	**0.000**
		Temp. x light	25	0.000	4.096	**0.000**
		Error	72	0.000		
II	Growth	Temperature	3	0.000	6.260	**0.002**
		Species	2	0.002	33.104	**0.000**
		Temp. x Spec.	6	0.000	1.294	0.285
		Error	36	0.000		
II	C	Temperature	3	0.016	10.181	**0.000**
		Species	2	0.004	2.813	0.073
		Temp. x Spec.	6	0.004	2.521	**0.039**
		Error	36	0.002		
II	N	Temperature	3	44.150	27.592	**0.000**
		Species	2	2.911	1.820	0.177
		Temp. x Spec.	6	16.147	10.091	**0.000**
		Error	36	1.600		
II	C:N	Temperature	3	367.020	15.394	**0.000**
		Species	2	5.437	0.228	0.797
		Temp. x Spec.	6	166.975	7.004	**0.000**
		Error	36	23.841		
II	Chl a	Temperature	3	0.028	0.820	0.491
		Species	2	17.130	493.726	**0.000**
		Temp. x Spec.	6	0.224	6.443	**0.000**
		Error	36	0.035		
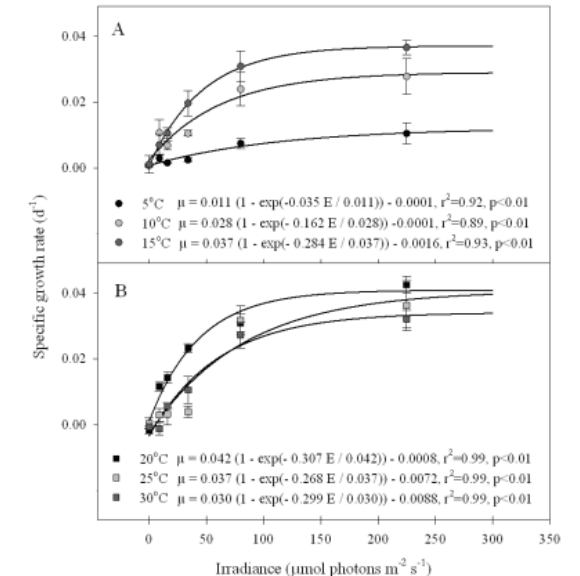
Positive climate impact

- We looked into what sorts of other unwanted chemicals, we can also isolate and remove

- We mapped natural bacteria, that can facilitate biodegradability

- Will do PFAS measurements in the future

WHAT IF LAB

HVAD NU HVIS ALGEPLAST BLEV FREM-TIDENS FORETRUKNE PLASTMATERIALE?

3. semester projekt, Laborant-uddannelsen, EAAA

| Arsen, As µg/L	Bly, Pb µg/L	Cadmium, Cd µg/L	Chrom, Cr µg/L	Kobber, Cu µg/L	Kviksølv, Hg µg/L	Nikkel, Ni µg/L	Zink, Zn µg/L
4,3	10	1,8	56	380	-	32	1500
-	-	-	-	-	< 0,2	-	-
3	3,1	0,1	94	18	-	61	68
-	-	-	-	-	< 0,2	-	-
2,2	2,8	0,1	22	5,1	-	19	52
-	-	-	-	-	< 0,2	-	-
17	3,1	0,9	13	70	-	10	920
-	-	-	-	-	< 0,2	-	-
38	3,3	0,3	31	54	-	15	52
-	-	-	-	-	< 0,2	-	-

ERHVERVSAKADEMI AARHUS

Geo SUBSURFACE EXPERTISE

Material properties

-Tensile strength scores 2x of high tensile PE types

- can manipulate its solidity, from being 100% solid to having air pockets at the center, down to 5% solid.

DJH DEN JYSKE HÅNDVÆRKERSKOLE

GRUNDFOS ®
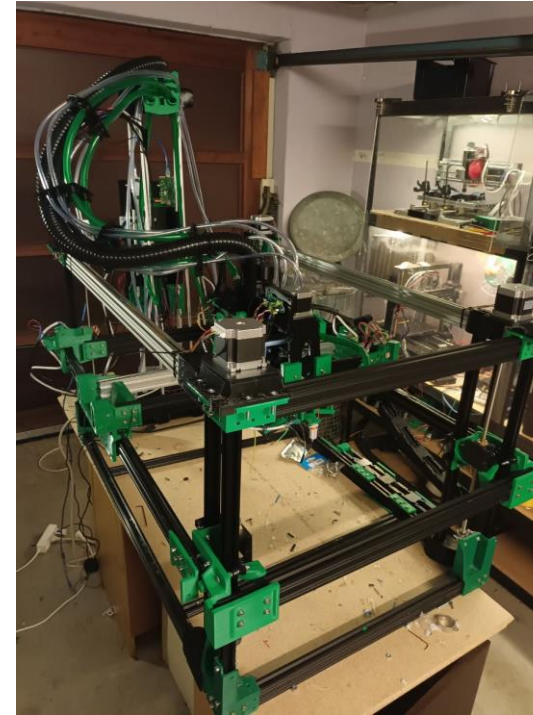
What is possible?

- 3D printing – Extrusion – Injection molding

- Different composites for various types of products