

What is a **GOOD** Fertilizer?

- Essential nutrients (Marco & micro nutrients, trace elements)
- Improves substrate/soil structure & holds water
- **Promote plant cell division leading to cell proliferation** (hormones, etc - biostimulants)

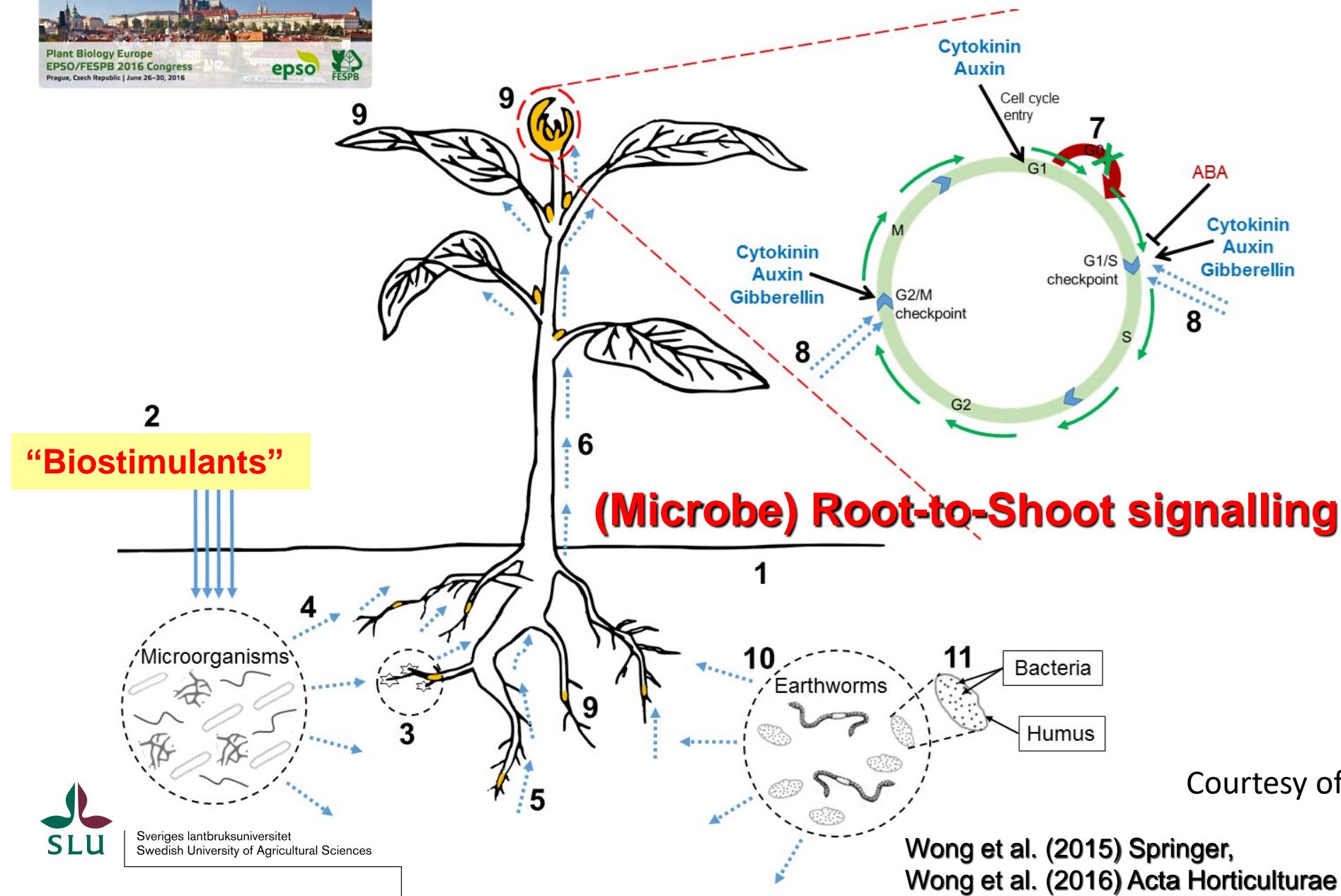


Courtesy of
Jean Yong,
SLU

Biostimulant(s) signals influencing plant growth



Swedish University of Agricultural Sciences

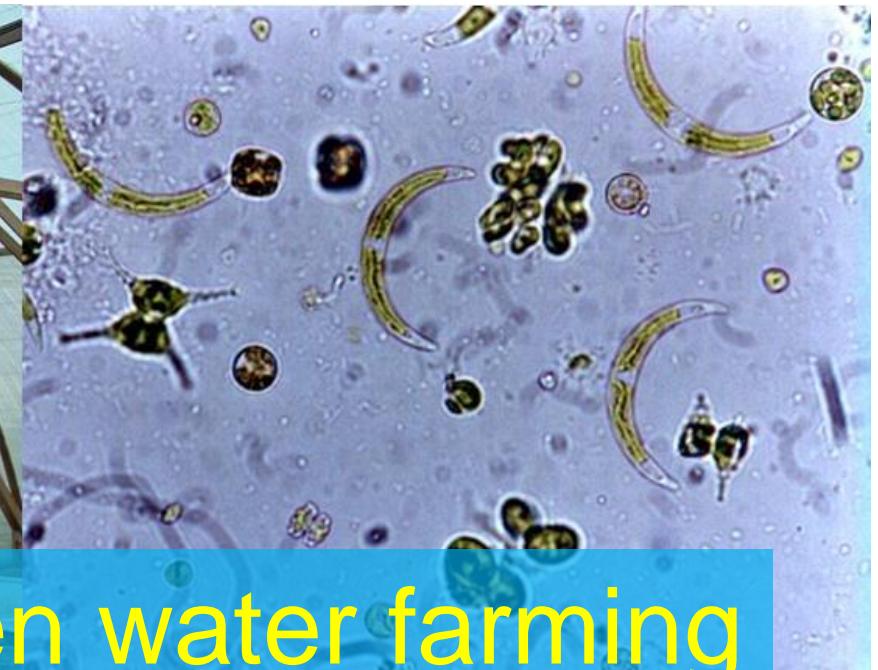


Tilapia i en Central Afrikansk Sjö och dam odling



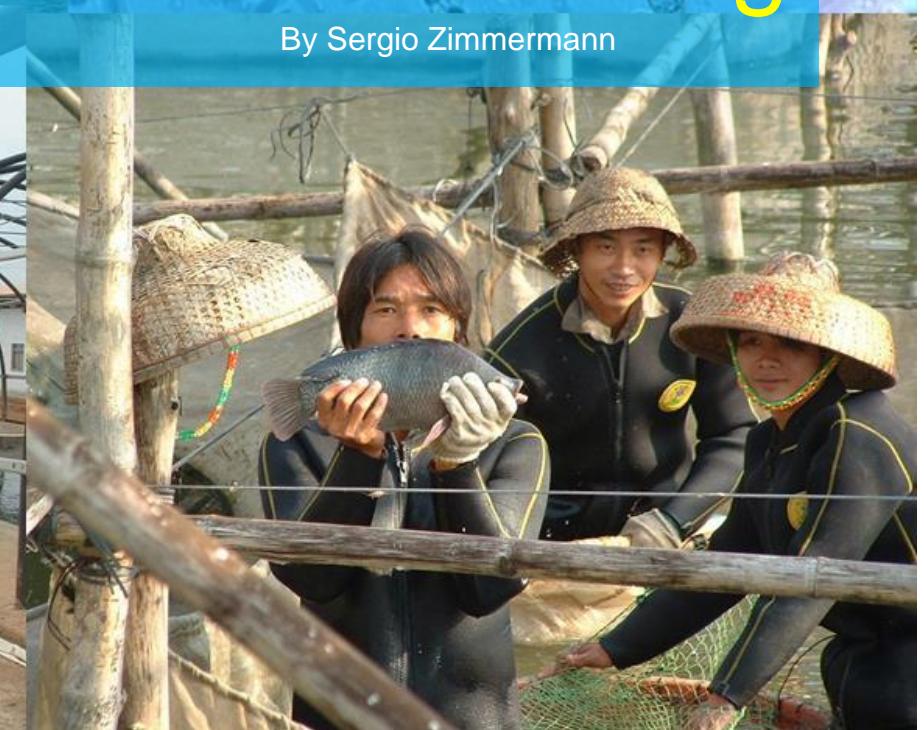
Akva-Agro; Produktionssystem där jord- och vattenbruk hänger samman i ett kretslopp.



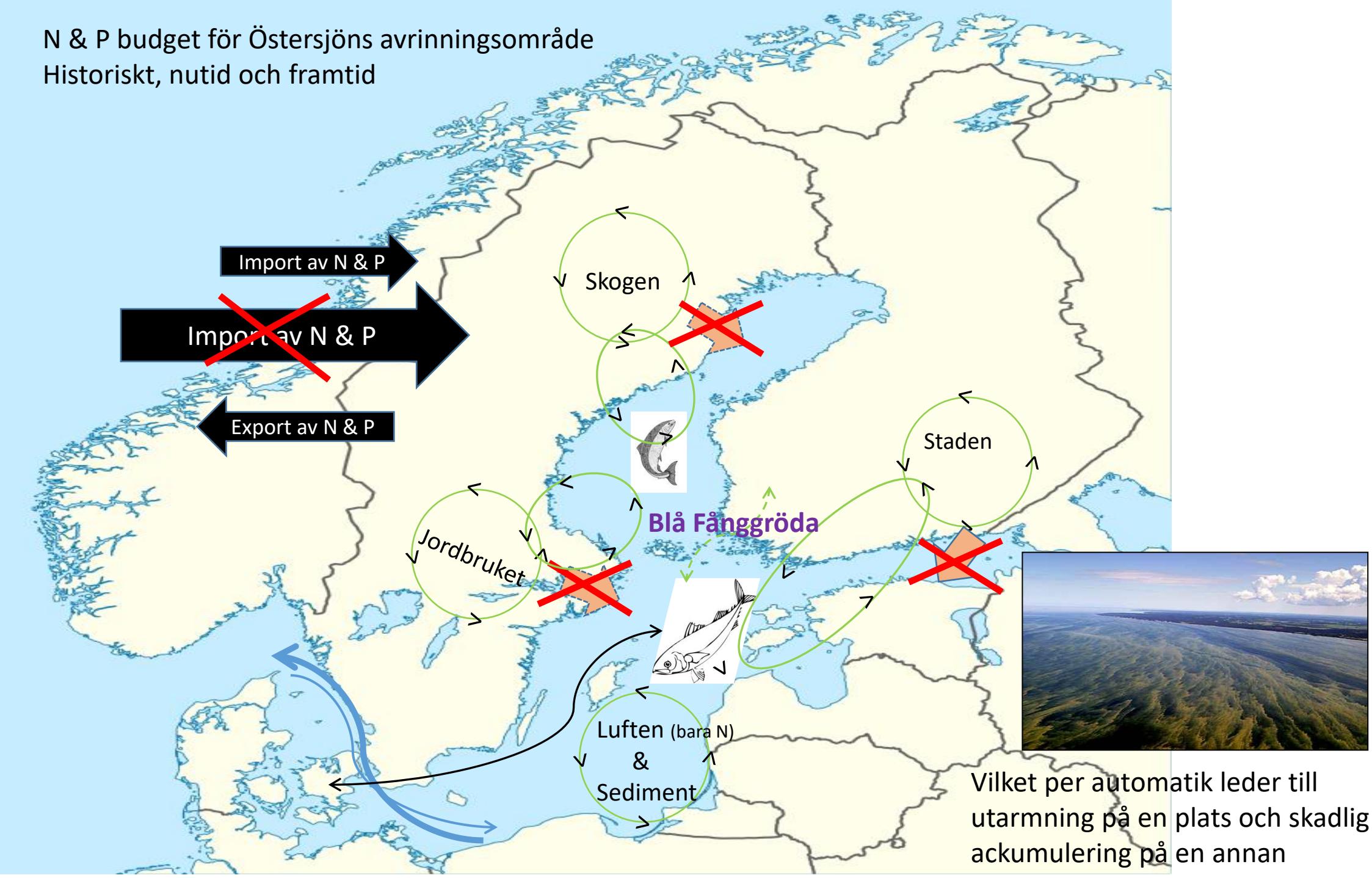


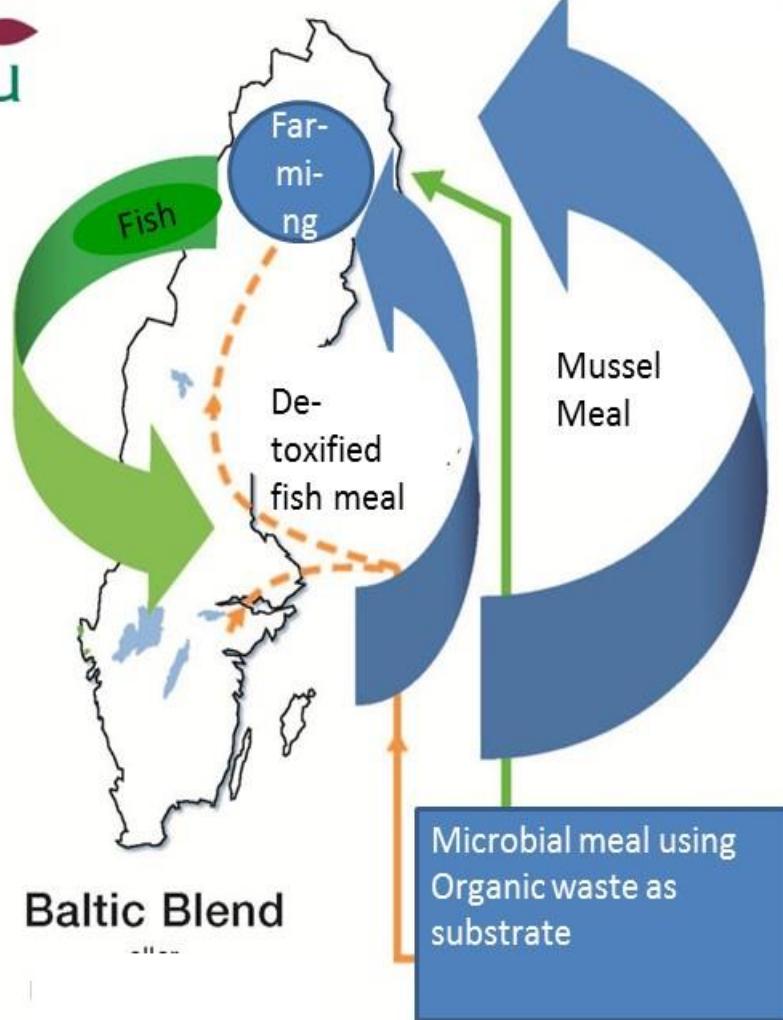
Green water farming

By Sergio Zimmermann



N & P budget för Östersjöns avrinningsområde Historiskt, nutid och framtid





A.Kiessling

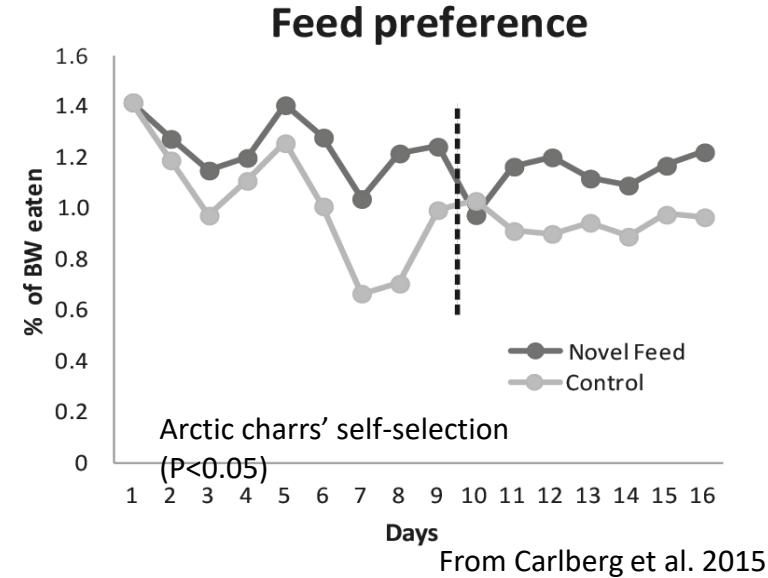
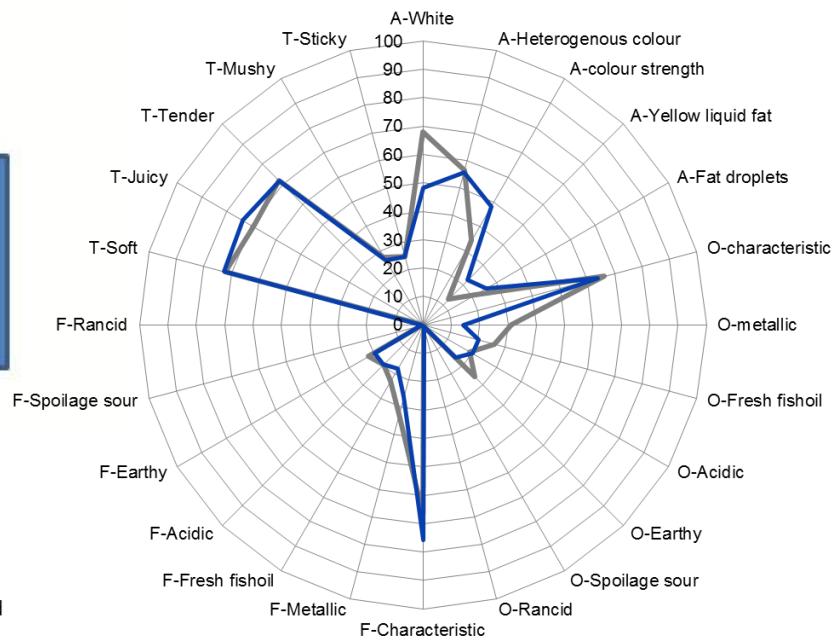
Preference test:

C: 6.19 out of 9

BB: 6.35 out of 9

— Baltic Blend

— Commercial type


Sensory evaluation


Robin Hood principen

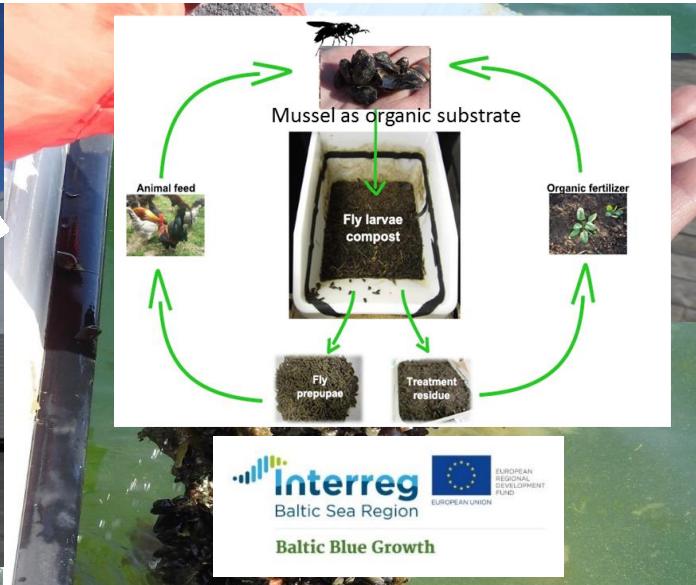
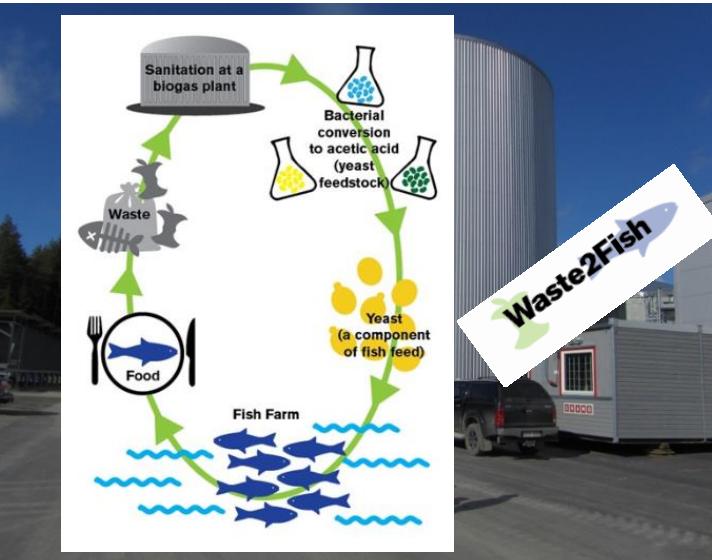


From Carlberg et al.

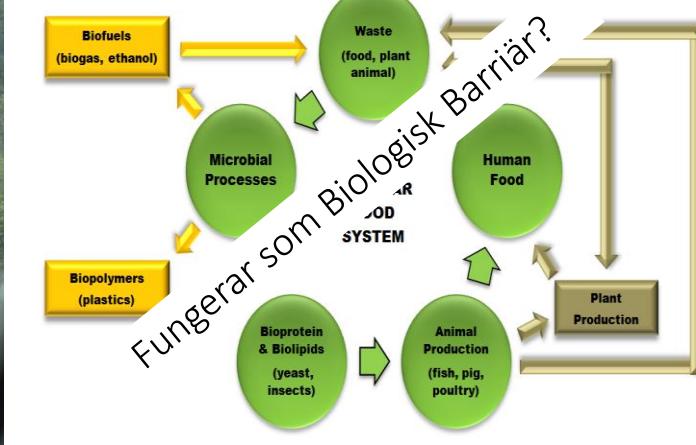
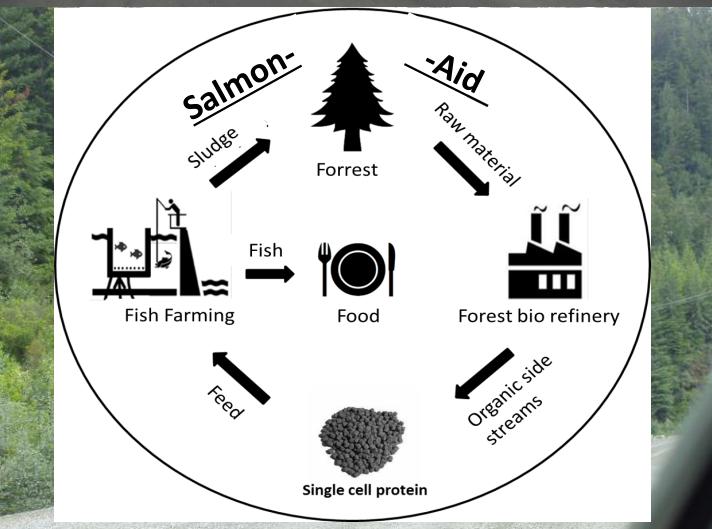
Foder till fisk är en utvecklingsnäring för Sverige

KOL
TILL
MAT

Exempel på
pågående
projekt



Force up value
Pre och pro-biotika från sjöpong
(Luleå Tekniska Univ./ Marine Biogas / SLU m.fl.)



Cirkularar pattogener?



5 ton fisk i disk,
Kretsloppsflugan, Ensilage



Jästbolaget, Rotebro, Sweden.
Produce 20.000 ton yeast/year
optimized for producing CO₂

Good condition 10 mg of yeast => 150 ton in a week.

Growth rate / day:
Bacteria every 20 min => 2⁷²
Yeast every 2 h => 2¹²
Micro algae once a day => 2¹



<https://youtu.be/DhR2jDS2IJI>

Yeast picture courtesy of Matilda Olstorpe

Single chemicals and carbon chain

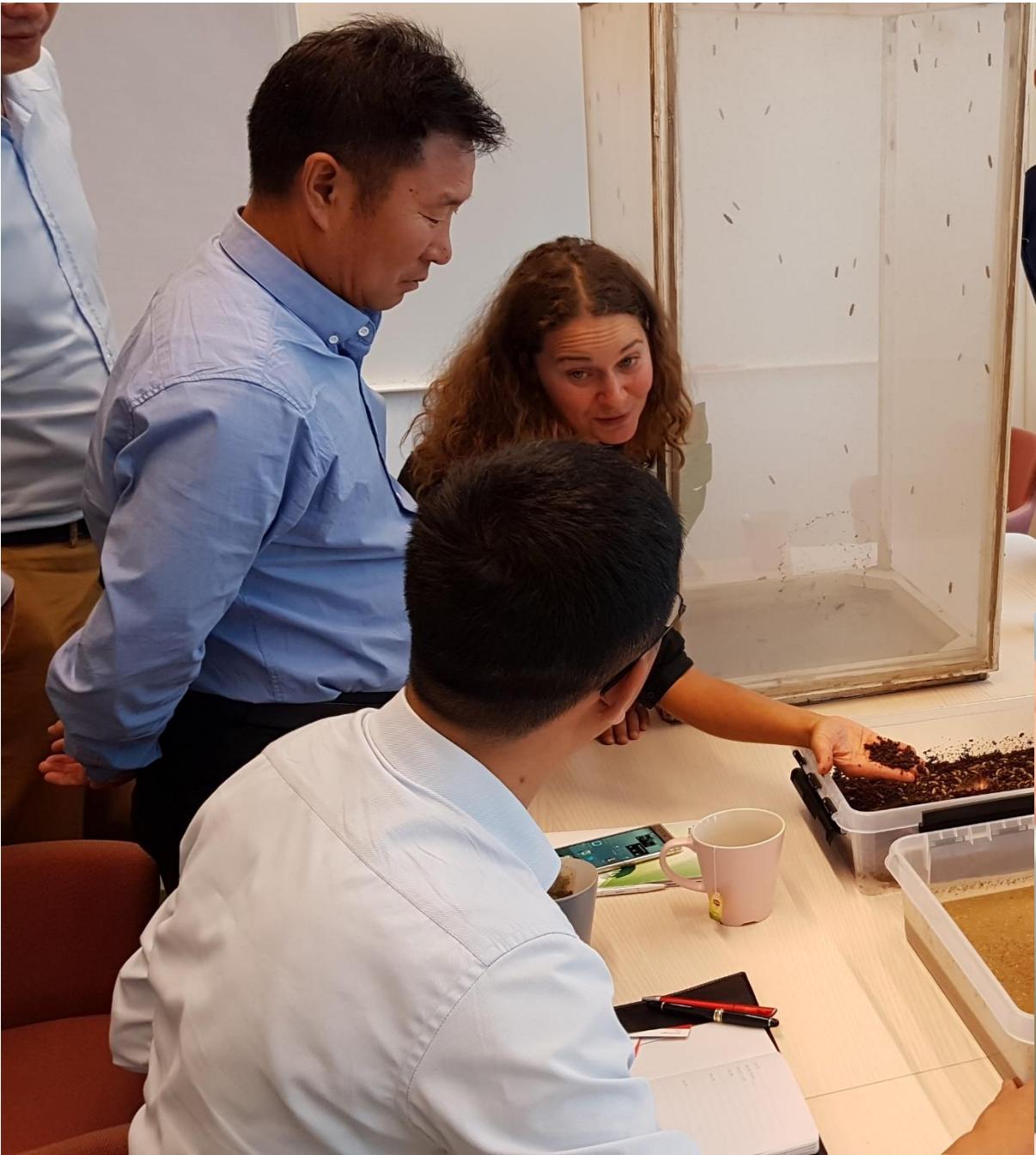


Sanitized
Protein, lipids and vitamins

Protein of low value



Sanitized protein of high value

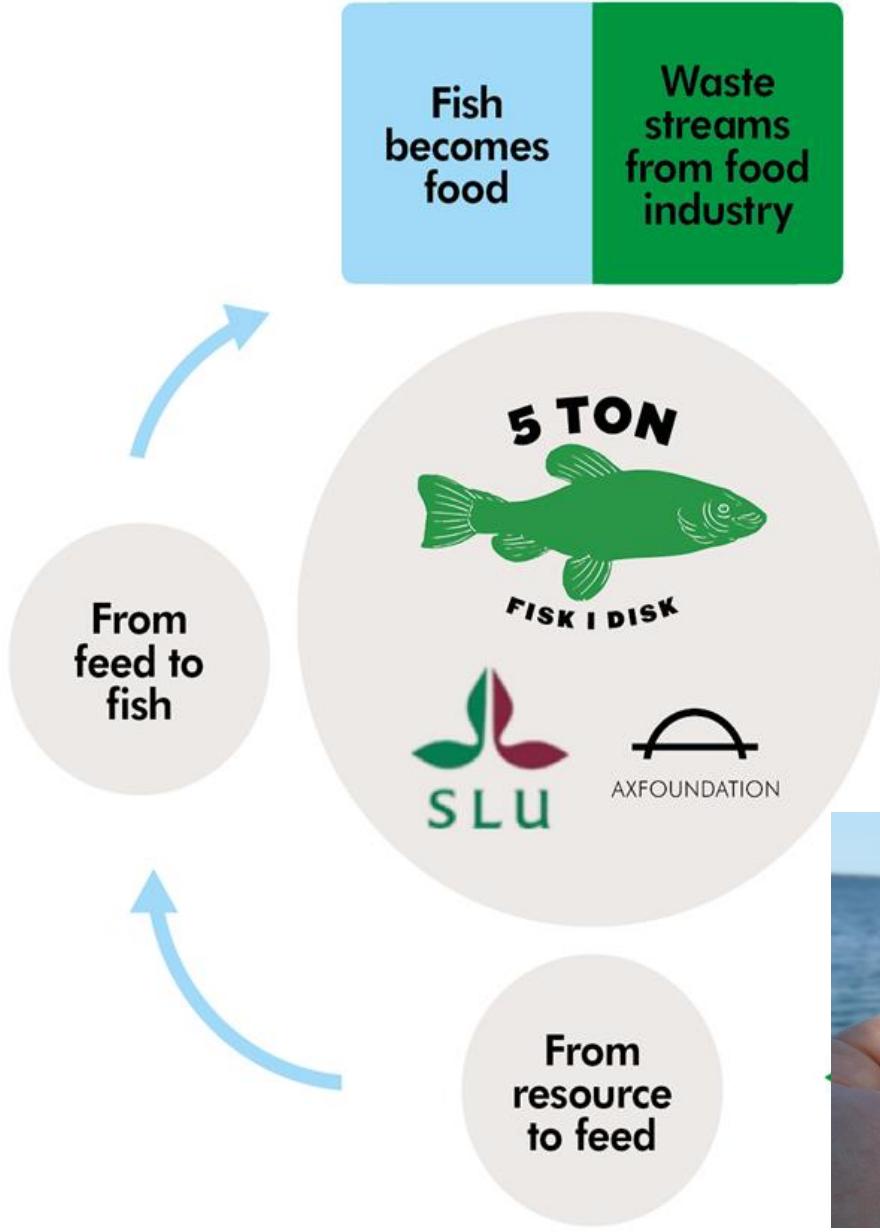
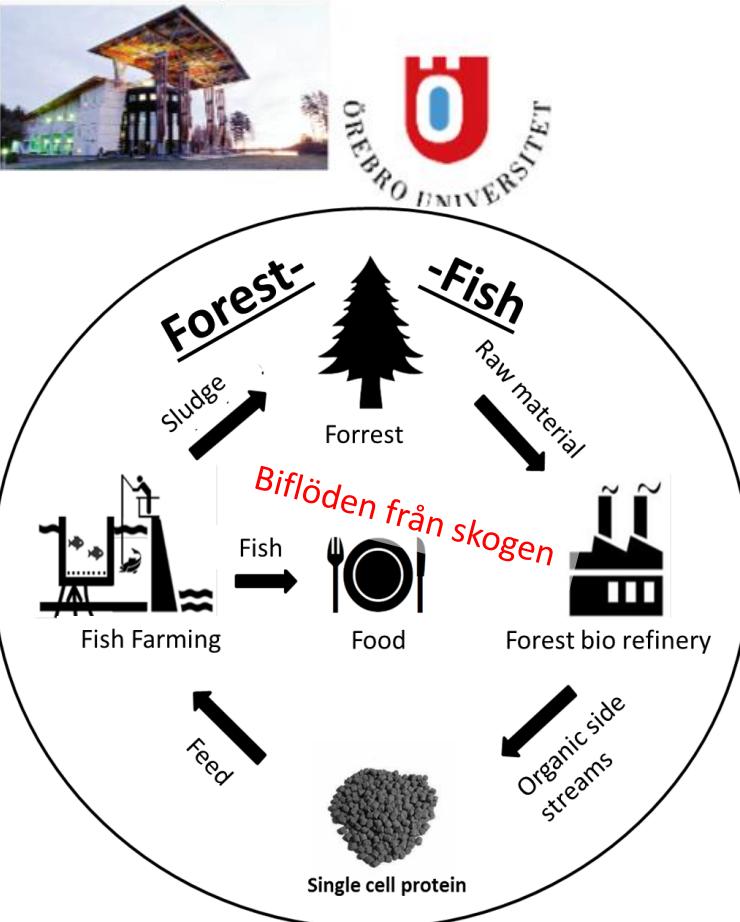


Rank	Germany	UK	Italy	Spain	Norway	France	Poland
1	Taste	Safety	Safety	Taste	Safety	Safety	Safety
2	Safety	Taste	Taste	Safety	Taste	Taste	Taste
3	Appearance	Price	Appearance	Price	Appearance	Appearance	Appearance
4	<u>Sustainability</u>	Appearance	Op				
5	<u>Welfare</u>	<u>Sustainability</u>	P				
6	<u>Env. Impact</u>	Nutrition	Nut				
7	Convenience	<u>Welfare</u>	<u>W</u>				
8	Price	<u>Env. Impact</u>	<u>Env.</u>				
9	Nutrition	Convenience	<u>Sust</u>				
10	Origin	Fairness	Conv				
11	Fairness	Wild	V				
12	Wild	Origin	Vari				
13	Variation	Variation	Fairness	Fairness	Variation	Fairness	Fairness





Axfood



Fiskhallen

Sorunda



From
feed to
fish



Fish
becomes
food



From
waste to
resource



From
resource
to feed

