



# InsektProtein

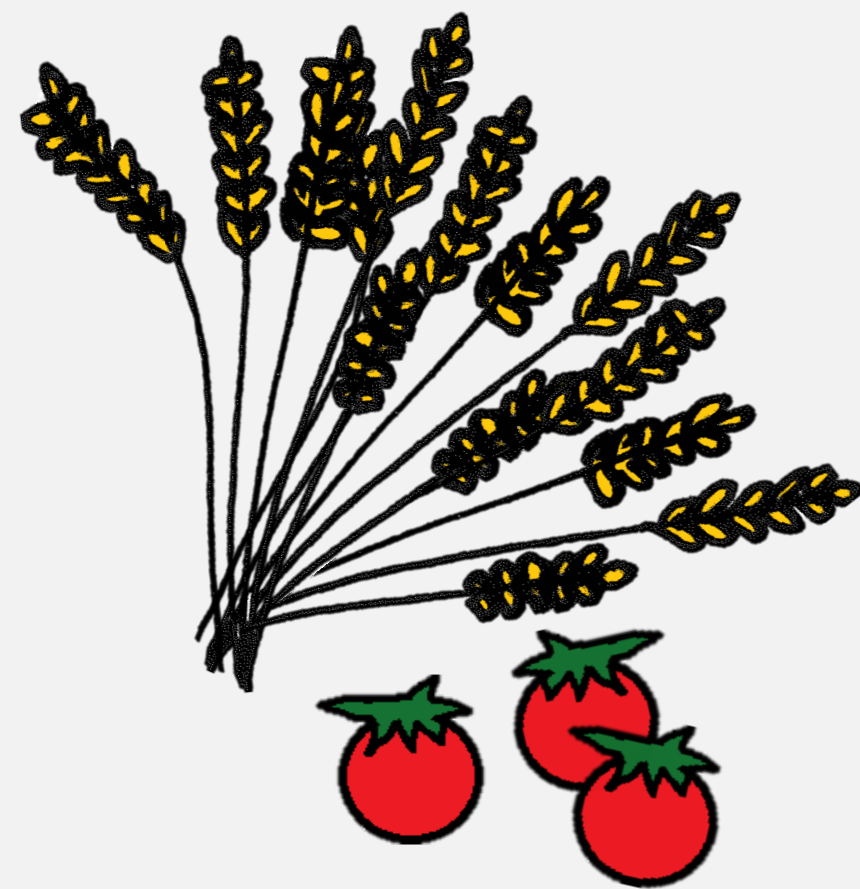
Automatisert  
Bærekraftig  
Sirkulært

Grønnby, 3 Mai 2018  
Stavanger



# Insekt-protein for en sirkulær økonomi

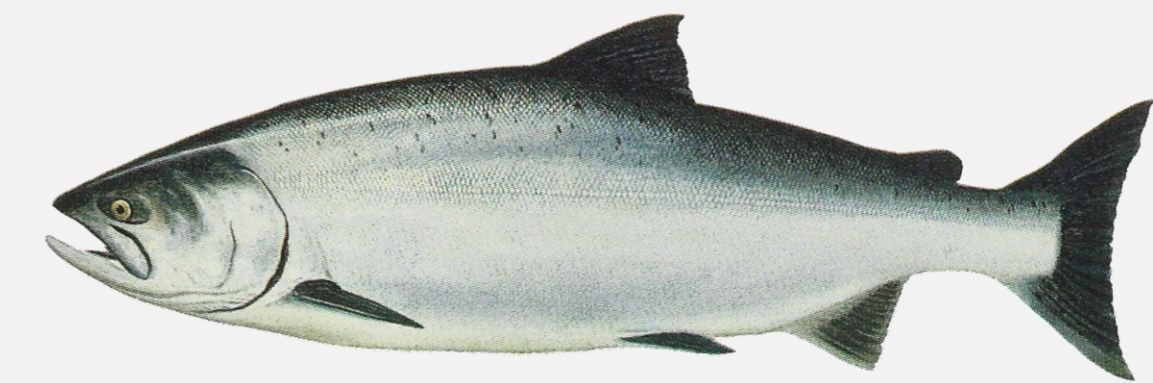
---



Restråstoff  
«Søppel»



Høykvalitets  
protein



Fiskeoppdrett

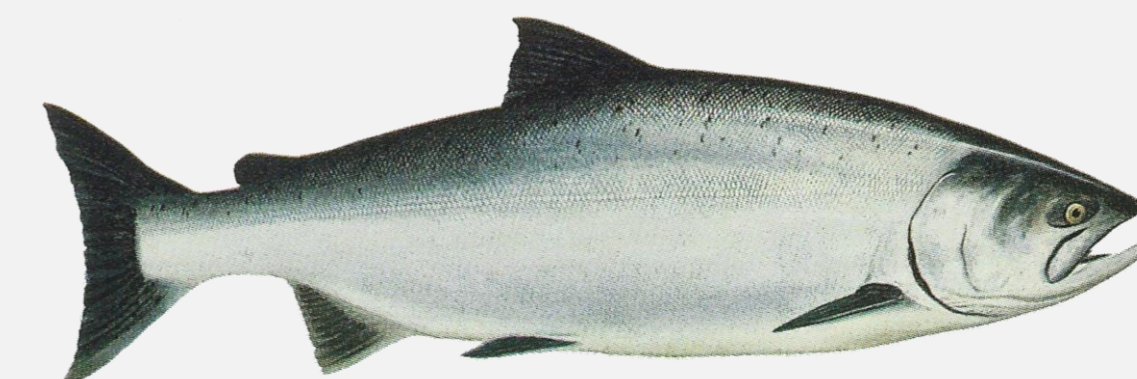
# Konsept



**PRODUKT**  
insektmel  
olje

**BI-PRODUKT**  
klasse-0  
gjødse

**KUNDE**  
Mat  
oppdrettsnæringen  
petfood



Forhindre

Ombruk

Resirkulere

Energi

Forbrenning

Deponering

# Restråstoff

Reine kilder

Innsamling



Foring

Salg



Prosessering

Bakeri



Bryggeri



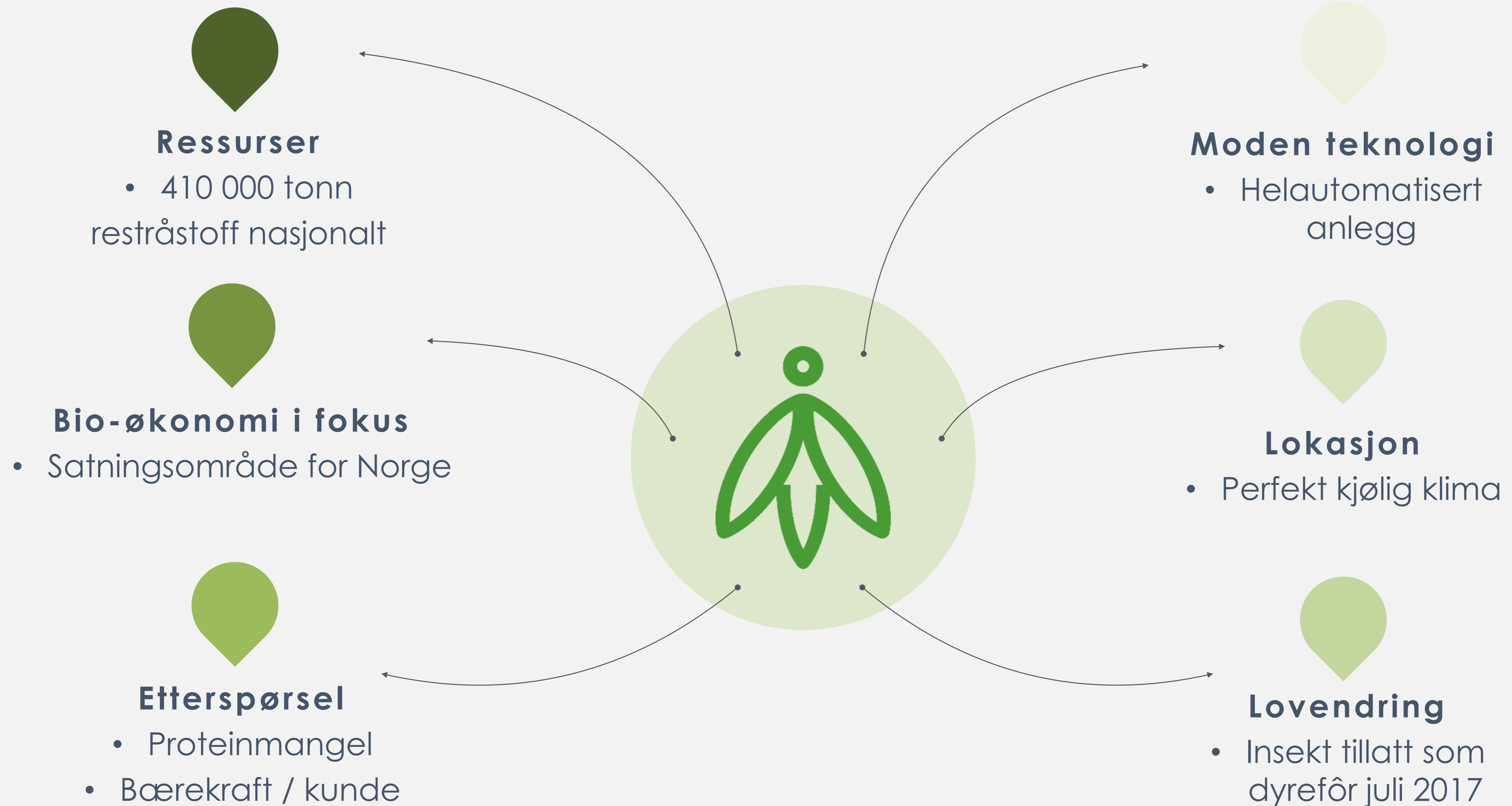
Grønnsaker



Korn og mel



# Hvorfor Norge



# Kontekst

Insektprotein

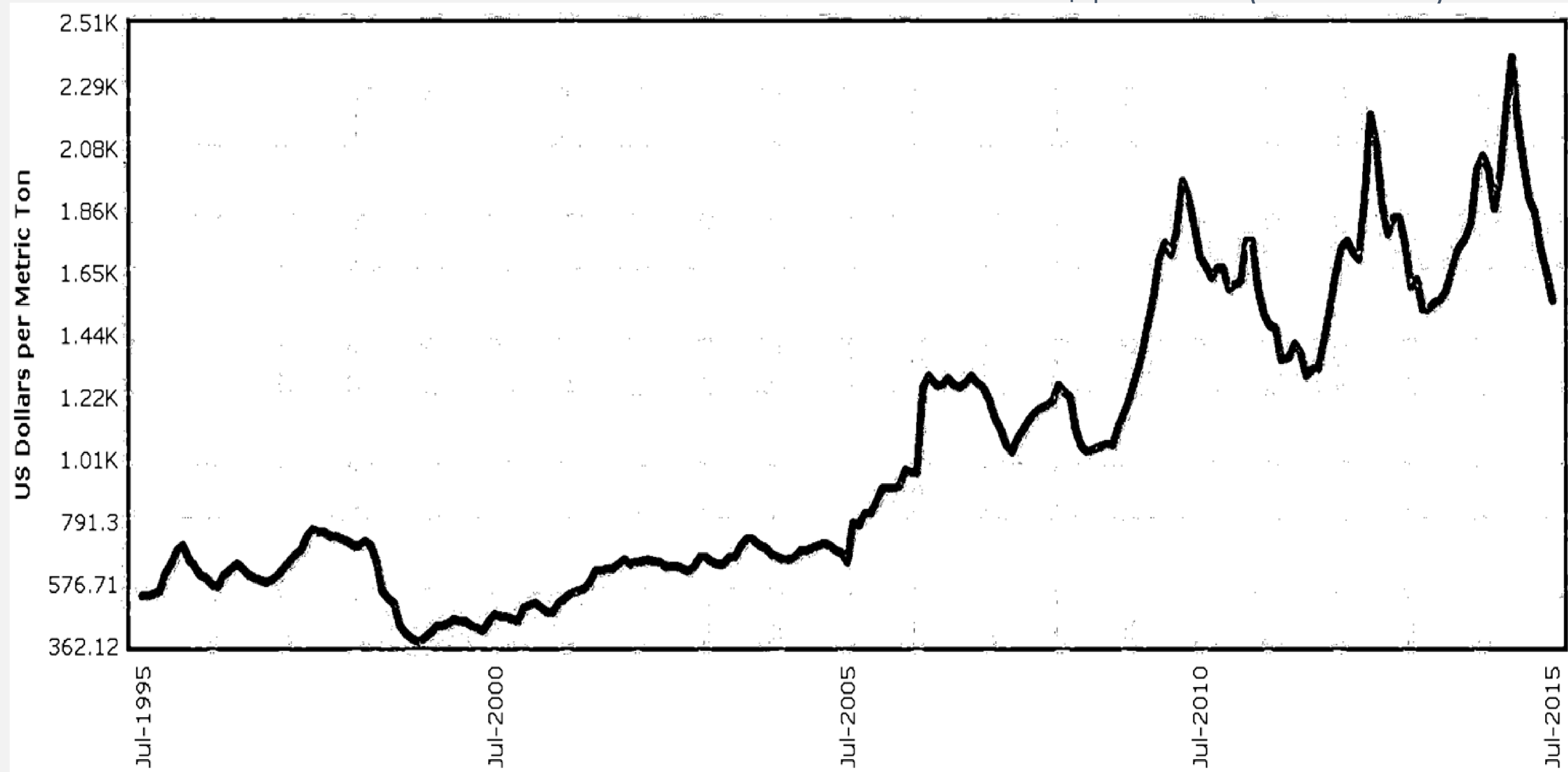
80%  
mindre  
CO2

60%  
Protein

Omega-3

Forbedret  
helse

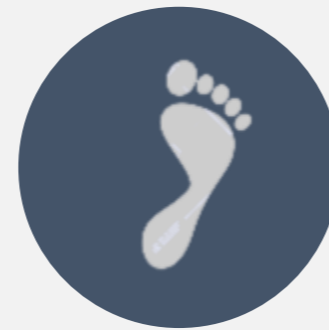
Fiskemel US\$ pr. Tonn (1995-2015)



# Bærekraft



**Oppsirkulert**



**Minimalt fotavtrykk**

Energi, vann, mat, m2



**Kortreist**



**Rent produkt:**

Ingen kjemikalier, sprøytemidler, hormoner, medisiner

**9** INDUSTRY, INNOVATION AND INFRASTRUCTURE



**12** RESPONSIBLE CONSUMPTION AND PRODUCTION



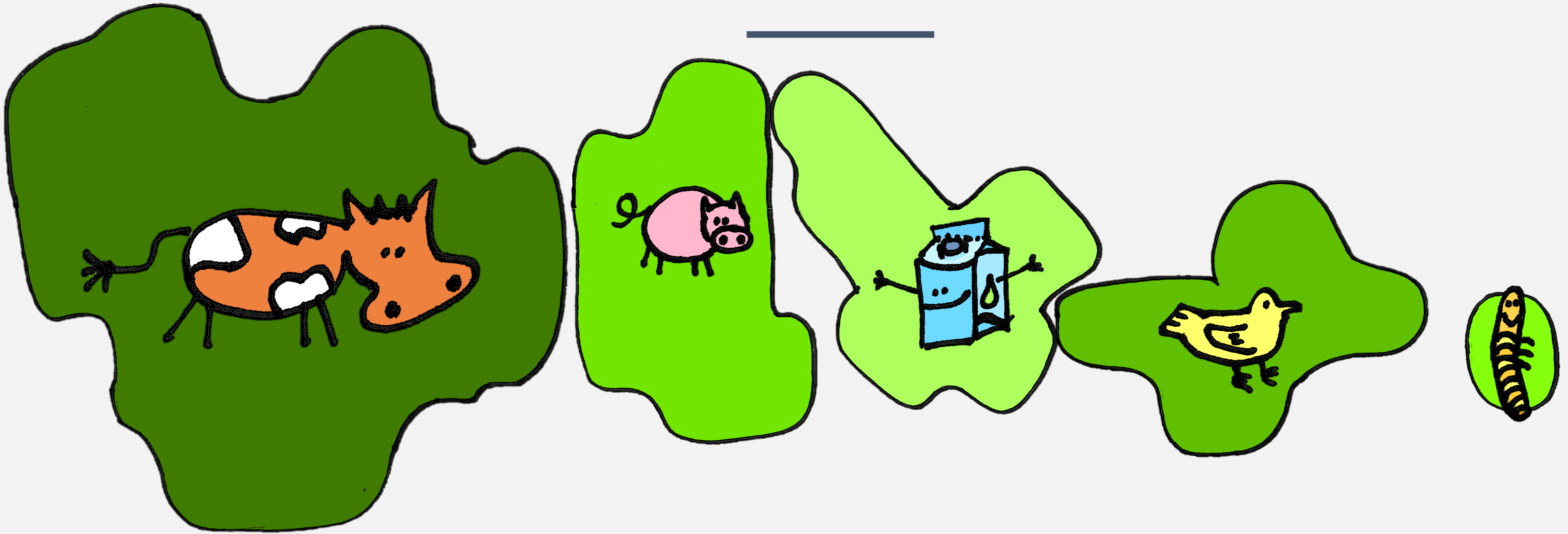
**13** CLIMATE ACTION



**14** LIFE BELOW WATER



# Arealbehov



**Biff**  
**200 m<sup>2</sup>**

**Svin**  
**60 m<sup>2</sup>**

**Melk**  
**40 m<sup>2</sup>**

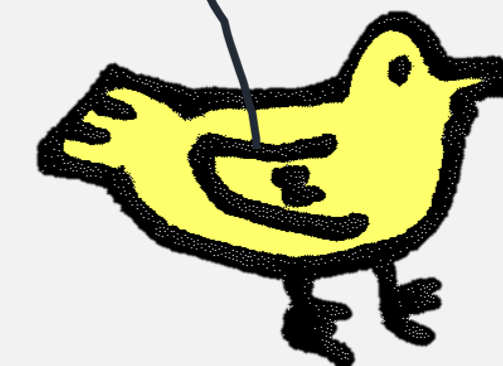
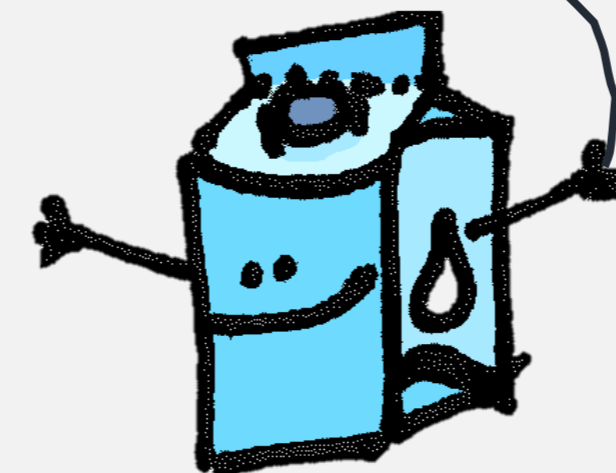
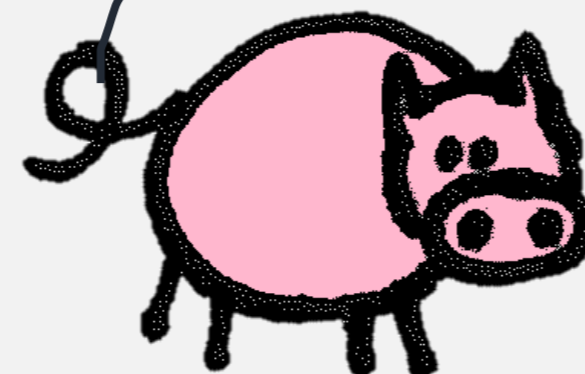
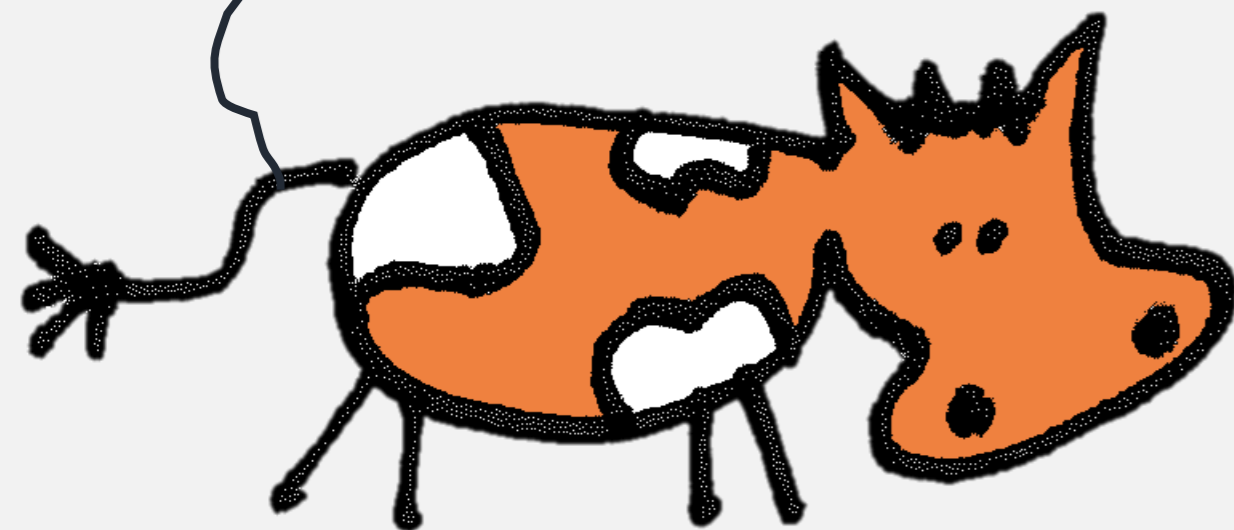
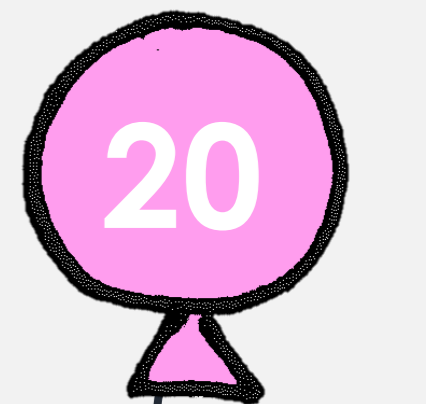
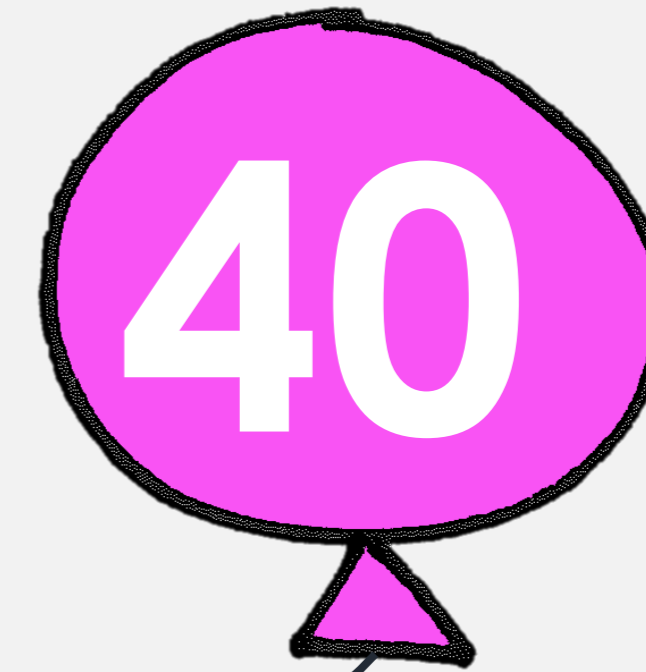
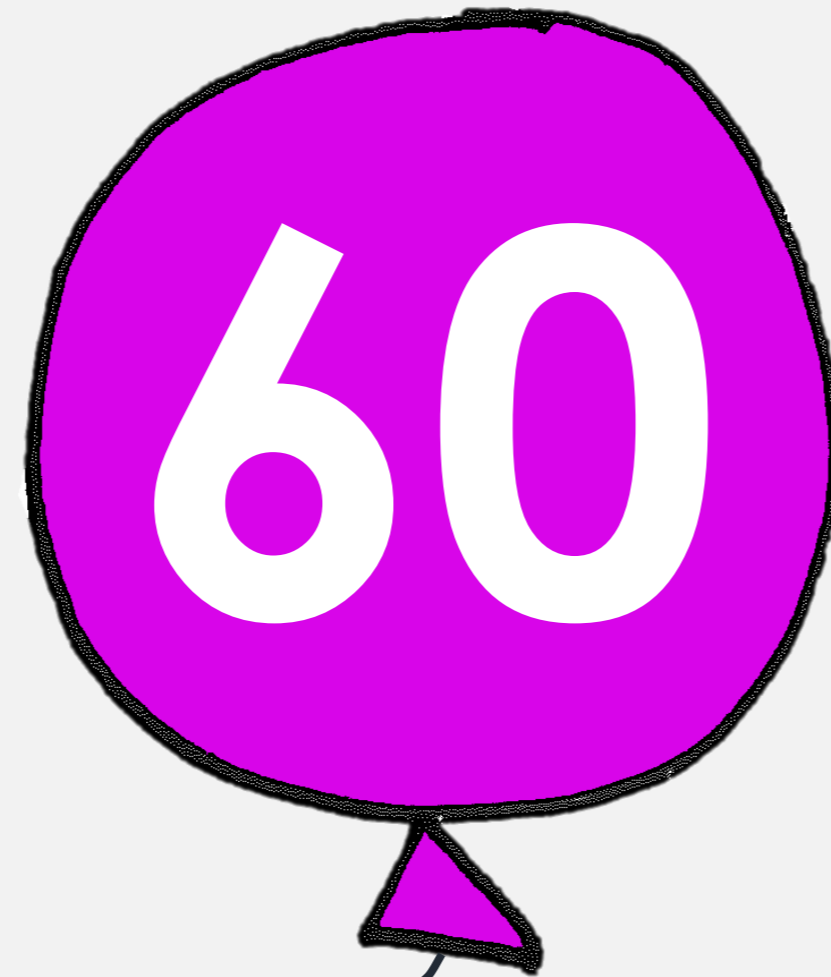
**Kylling**  
**50 m<sup>2</sup>**

**Melmums**  
**10 m<sup>2</sup>**



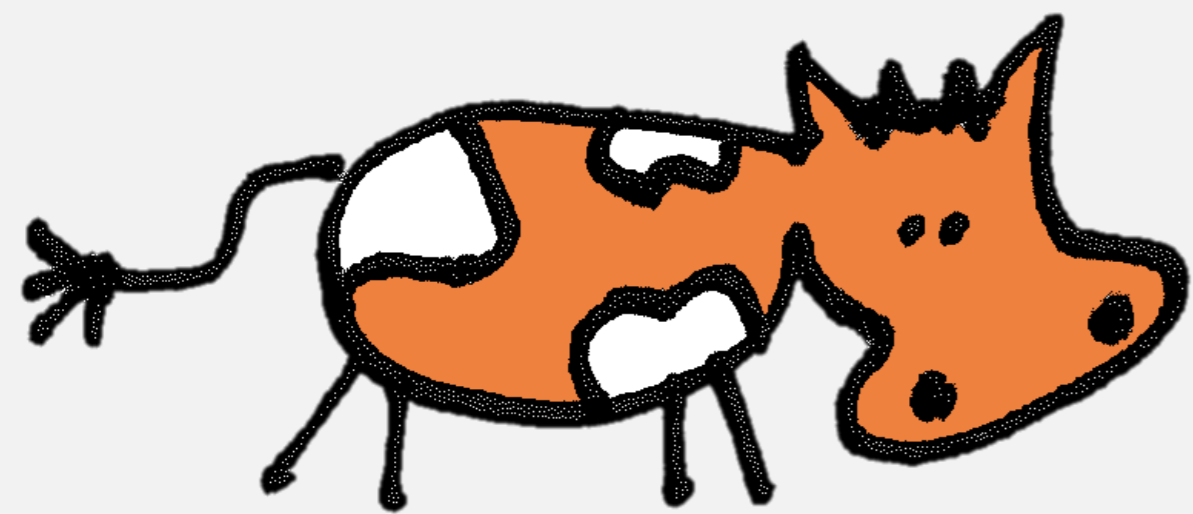
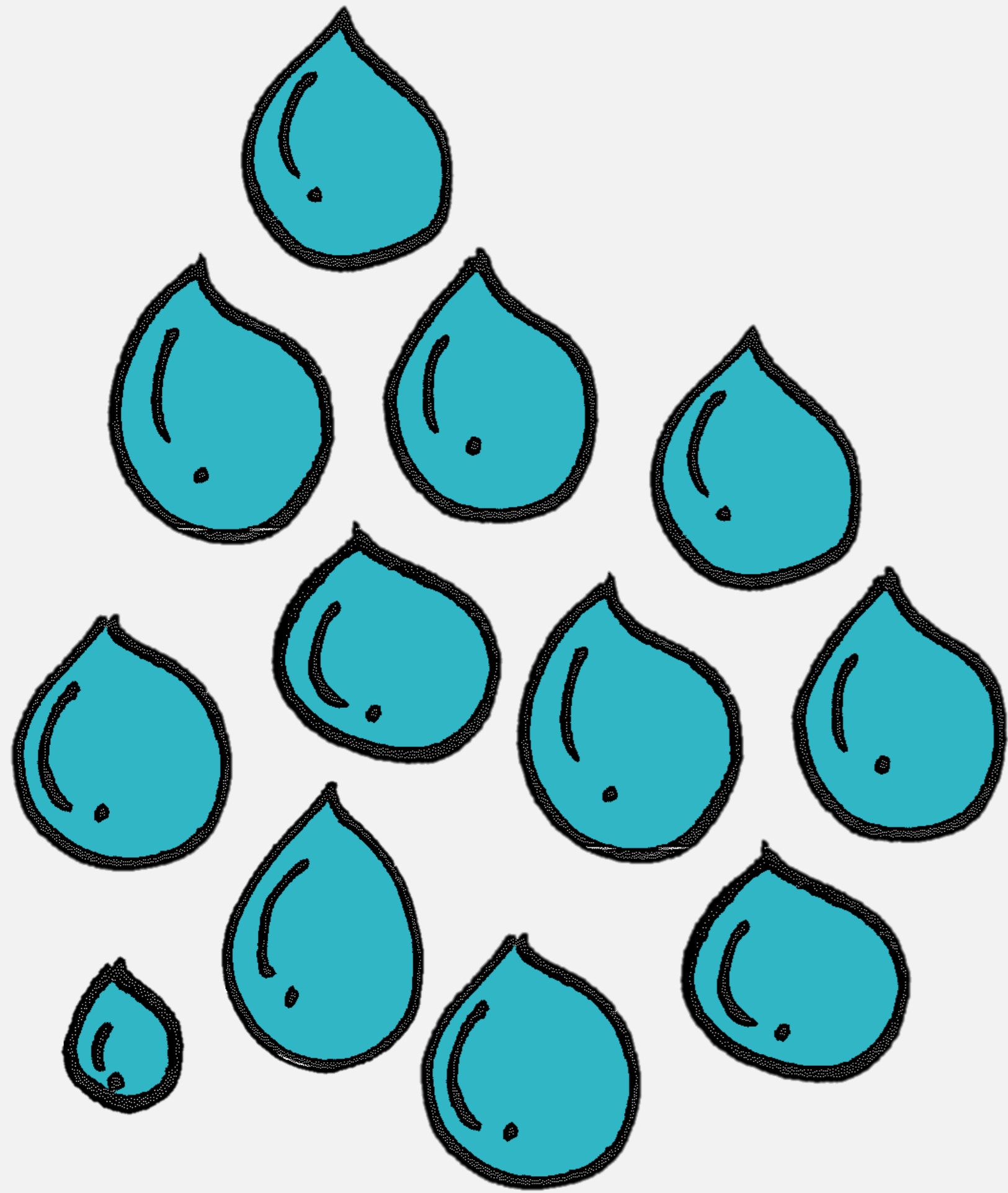
# Drivhusgassutslipp

Utslipp i Kg CO2  
ekvivalenter v/  
produksjon av 1 kg  
protein

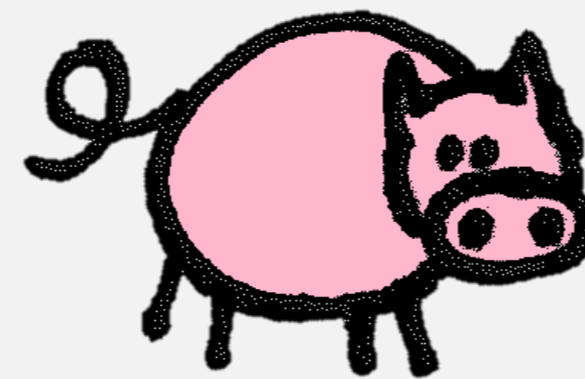
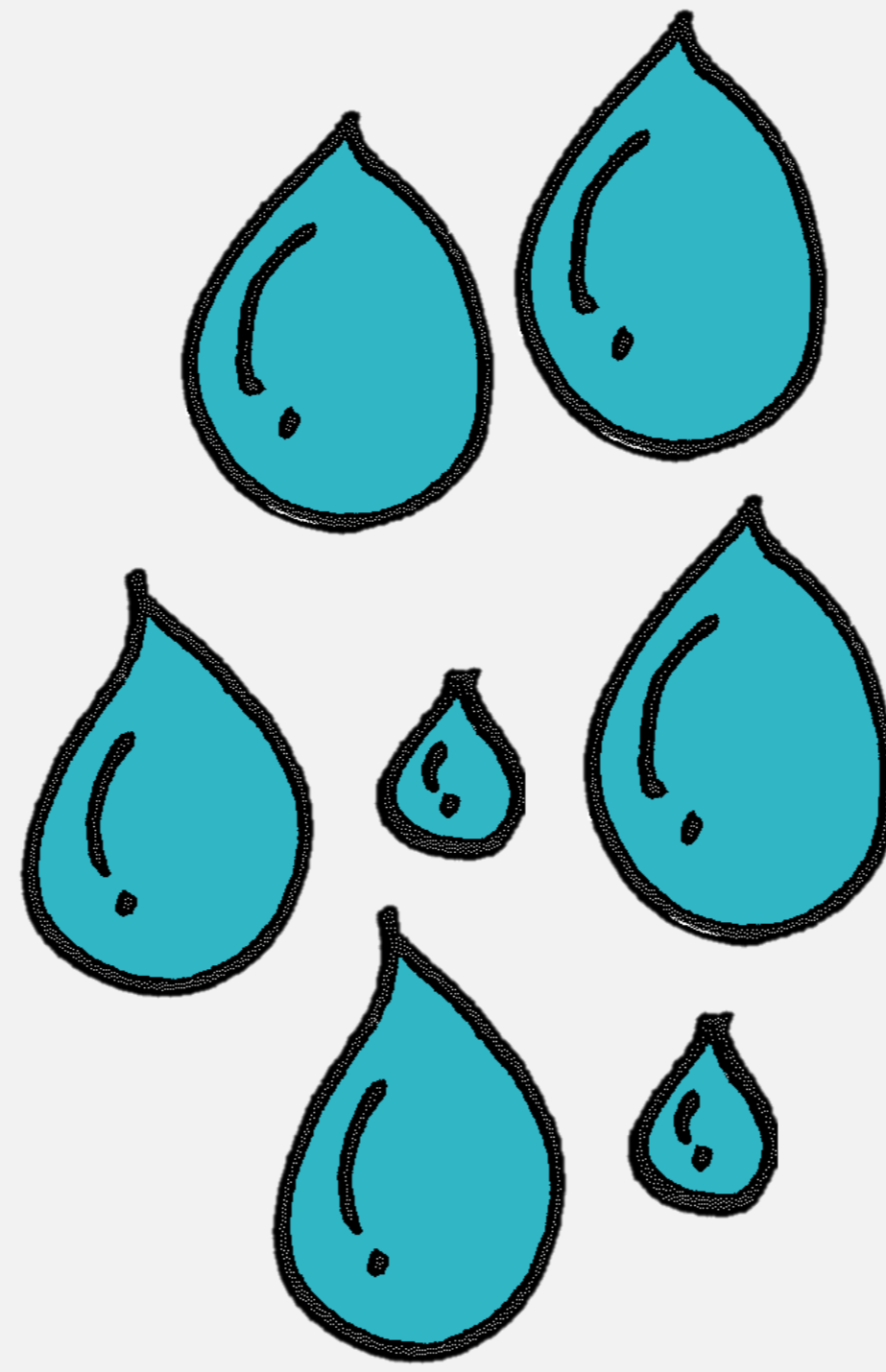


# Vannbehov

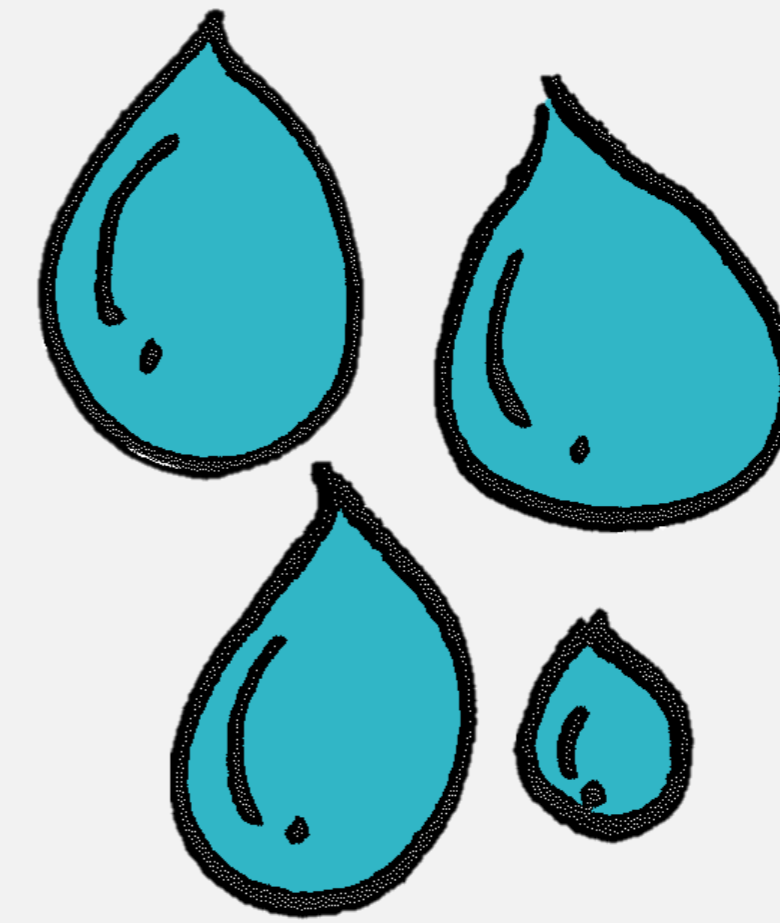
---



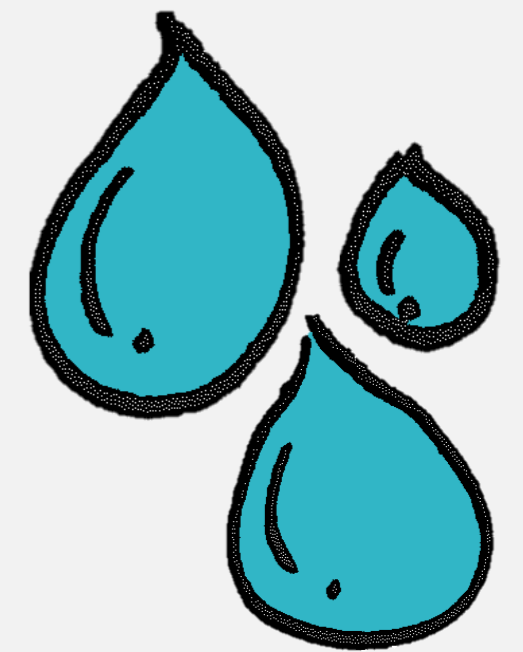
112  
l/g protein



57  
l/g protein

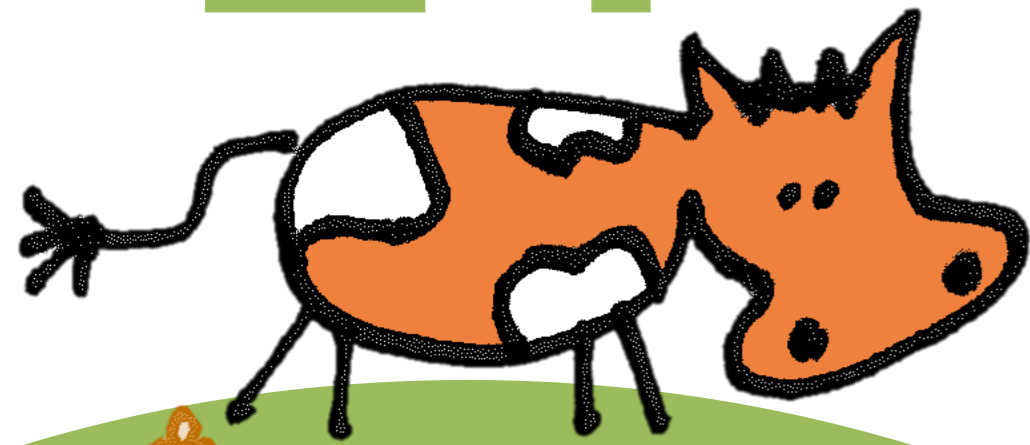


34  
l /g protein



23  
l /g protein

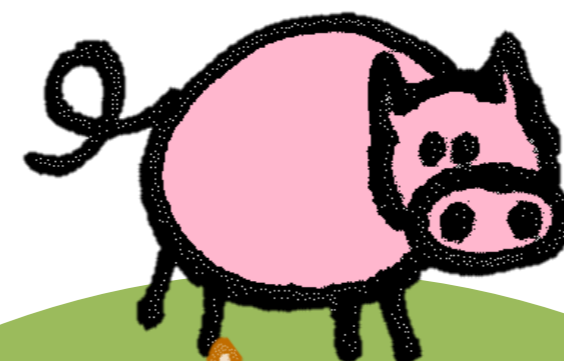
**24** Kg fôr/  
kg protein



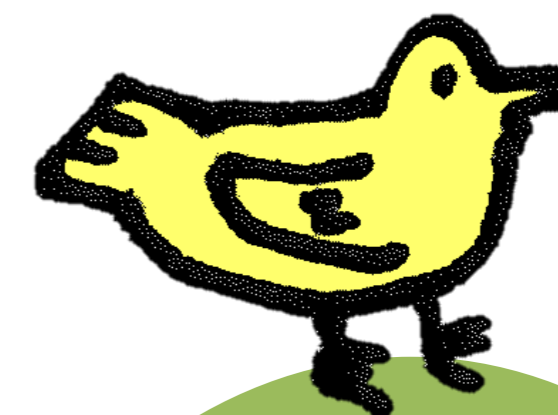
# Fôrbehov

---

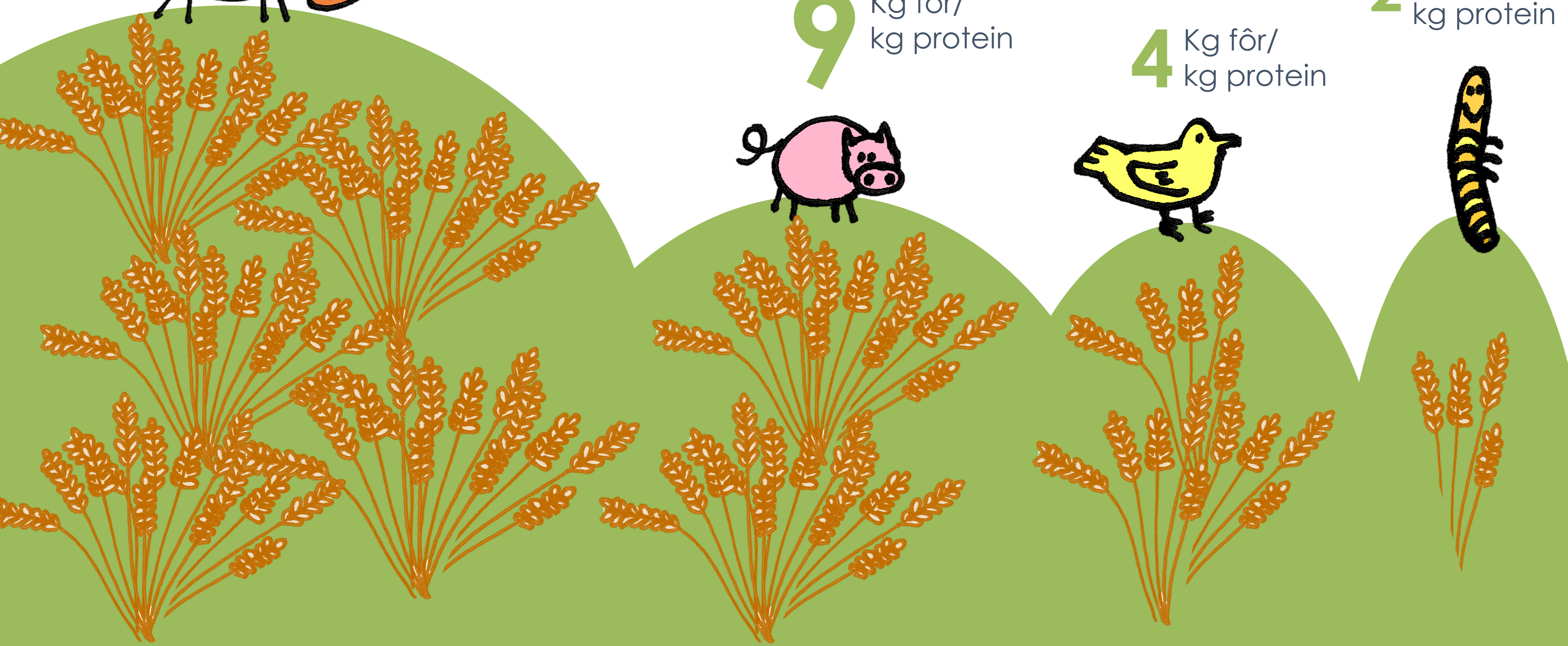
**9** Kg fôr/  
kg protein



**4** Kg fôr/  
kg protein



**2** Kg fôr/  
kg protein



**Salg**  
Første og eneste i salg

**FoU**  
Leder

**TEAM**  
4 x 100%



- 4år erfaring
- Multi-disiplinert

**Tilnærming**  
kreativ  
Kosteffektiv  
54 studenter 2016-18



# Oss i Invertapro

---



**Alexander Solstad**

Gründer, Økonomi, Strategi



**Marie Rødsten Sagen**

Teknisk, Regulatorisk



**Lukas van der Horst**

FoU, Produksjon

**Sarah Sandbrook**

Produksjon

1 x intern: Juni-Sept (ingeniør)

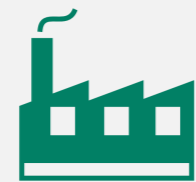
1 x intern: Biologi

# Hvordan bør en insekt-snack se ut?





# Tidslinje



2018-19

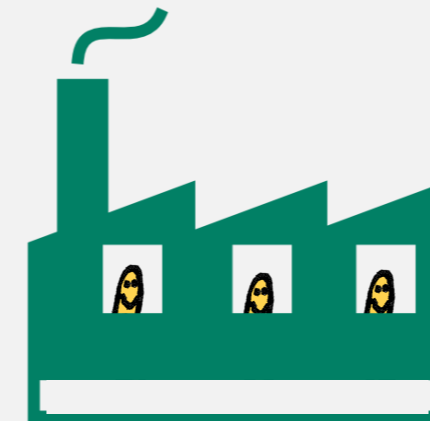
## Demonstrasjon Anlegg

8 000 t organisk

1 800 t produkt

Inntekt 68m/år

Overskudd 23m/år

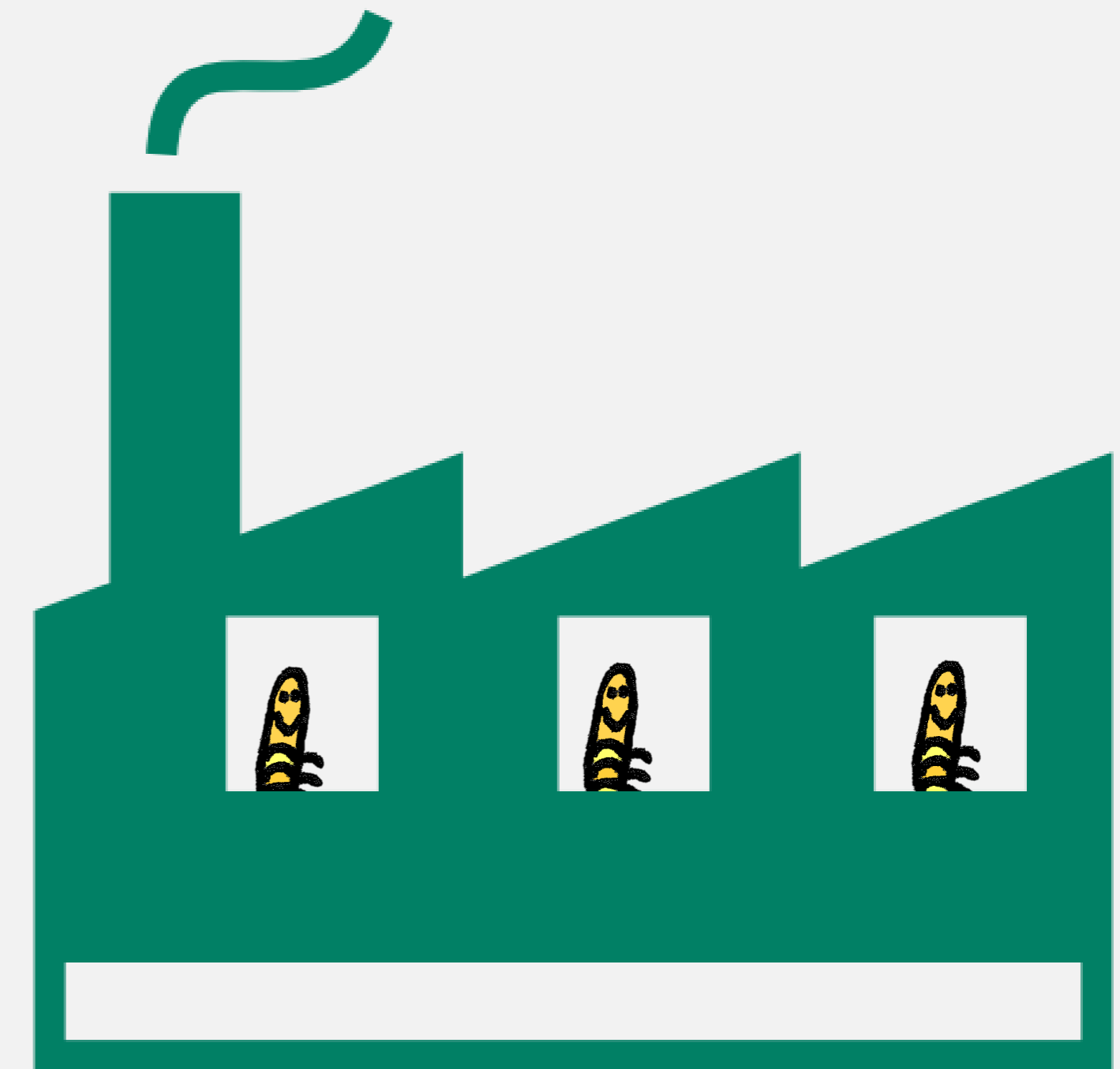


2020-24

## Full kapasitet System

40 000 t organisk

9 000 t produkt

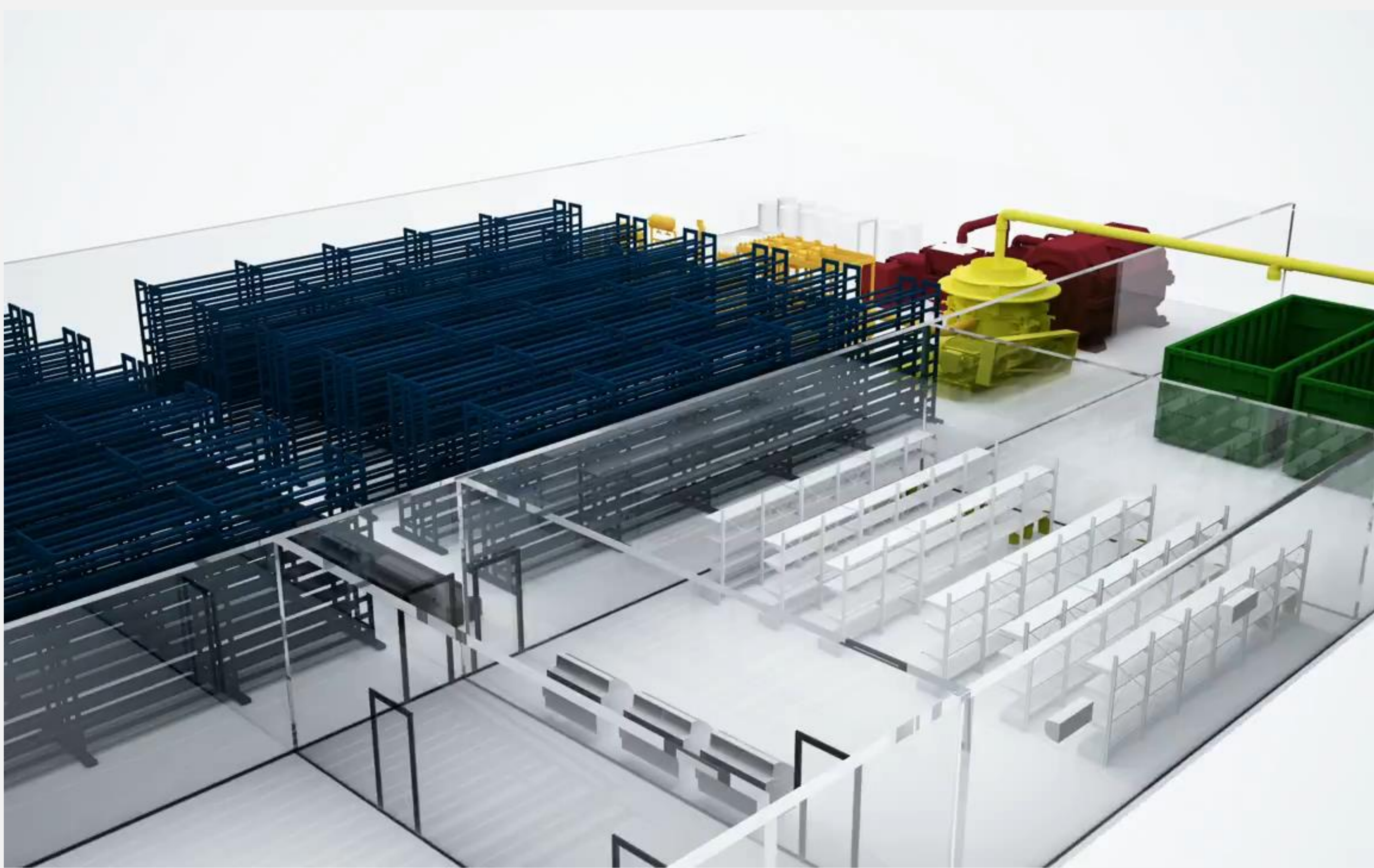


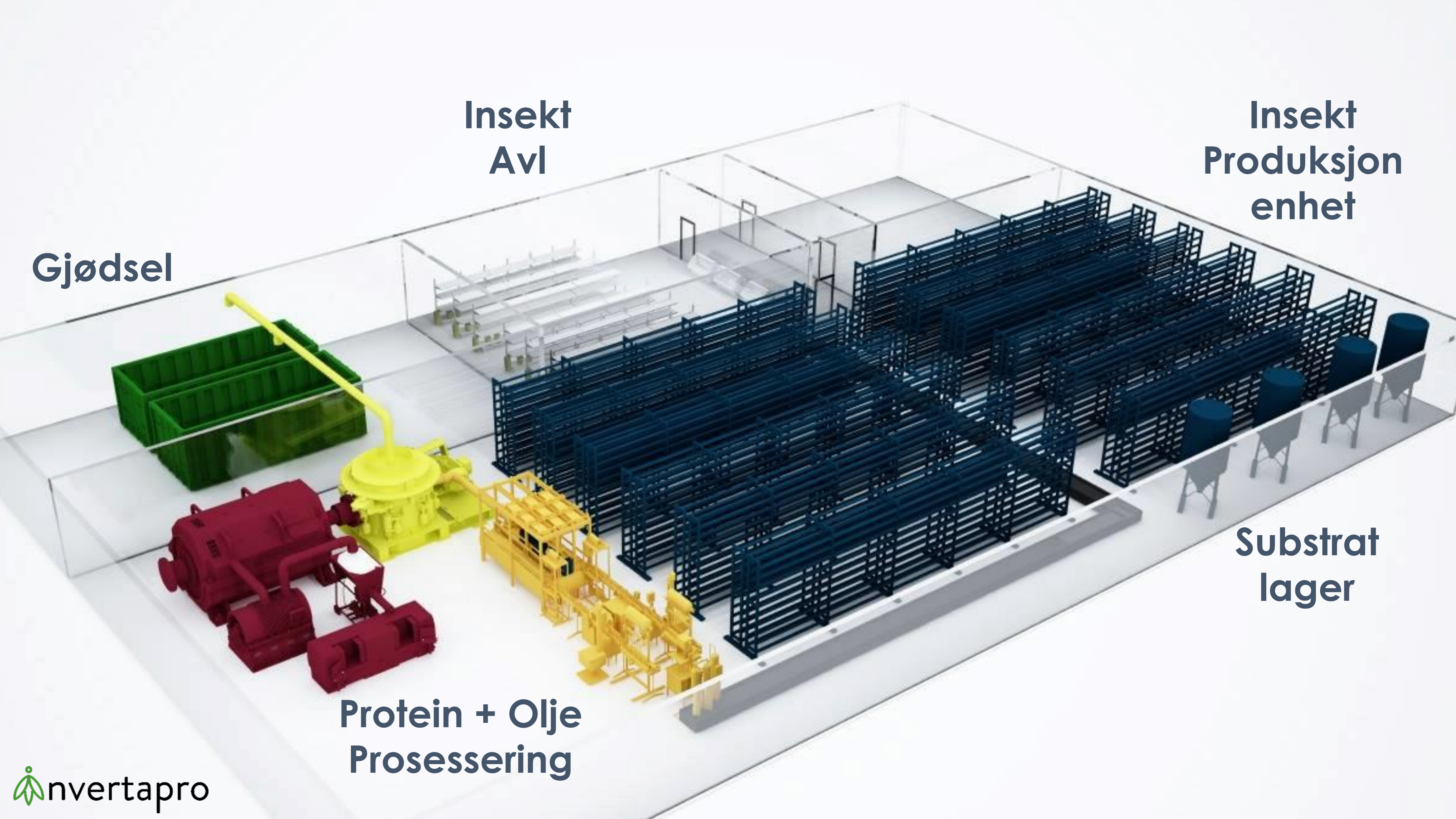
## Fremover

400 000 t+ Organisk

90 000 t produkt







**Insekt  
Avl**

**Insekt  
Produksjon  
enhet**

**Gjødsel**

**Substrat  
lager**

**Protein + Olje  
Prosessering**

# Invertapro



Vi trenger

- Protein – helst kortreist
- Bærekraft A-Å
- En sirkulær tilnærming

## Kapital & Støtte



## Konkurranser



National  
Finalist

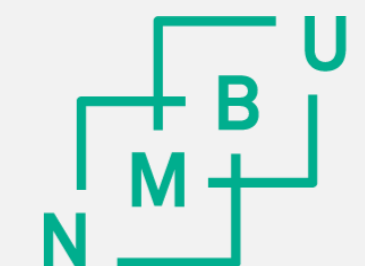
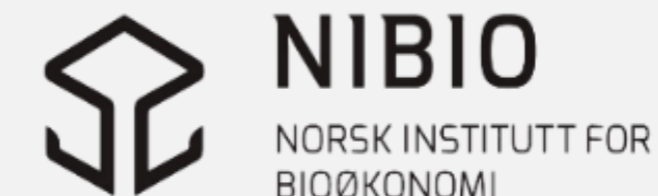
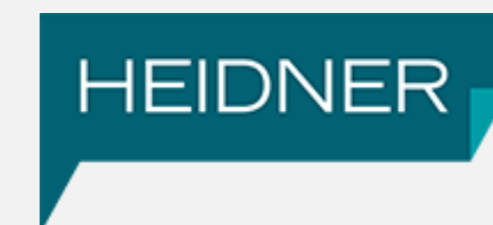


National  
Finalist



Innovation  
Prize  
Winner

## Kompetanse & Ressurser



Norges miljø- og  
biovitenskapelige  
universitet



du spiser allerede

**140 000**

insektdelel hvert år



når du spiser for eksempel

grønsaker,

bær,

kaffe og

kornprodukter.





@invertapro