

# Animal husbandry in NL

## Research topics & trends

### Sustainable dairy production

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Livestock Research



WAGENINGEN **UR**  
For quality of life

# Dutch dairy sector in 2015

- 17.200 dairy farms
- 360 dairy farms with on farm dairy processing
- Average size 89 cows, 790.000 kg/year
- 14 billion kg milk (appr. 70 % export)
- ~20 dairy companies (FrieslandCampina 75%)
- 2014/15: 870 million € investments in processing
  - Aware/Fonterra, FrieslandCampina, CONO, a.o.
- April 2015 end of EU quota -> production +12%
- New legislation on P-quota & production area needed
- Innovation and co creation



# Investments Dairy Processors (billion €)



# Outlook towards 2050 (FAO, 2013)

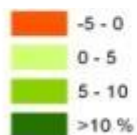
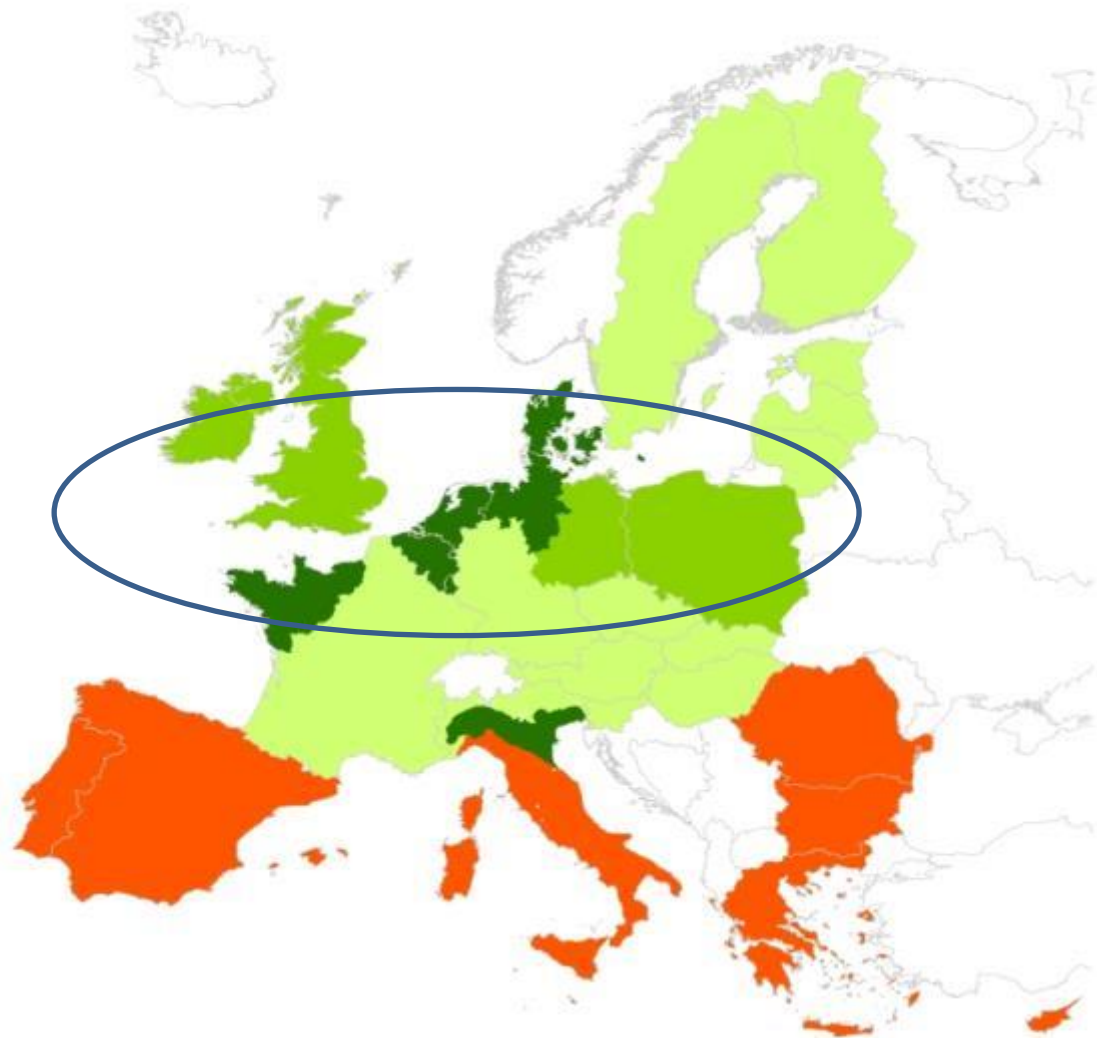
- + 2 billion people
- Increased food demand ( $>1\%$  / year)
- More animal protein in diet
- Milk demand increases 50%





# Change in milk production 2013-2023

(in %)



Source: Wageningen UR,  
2008 and 2013

# Research topics 2016

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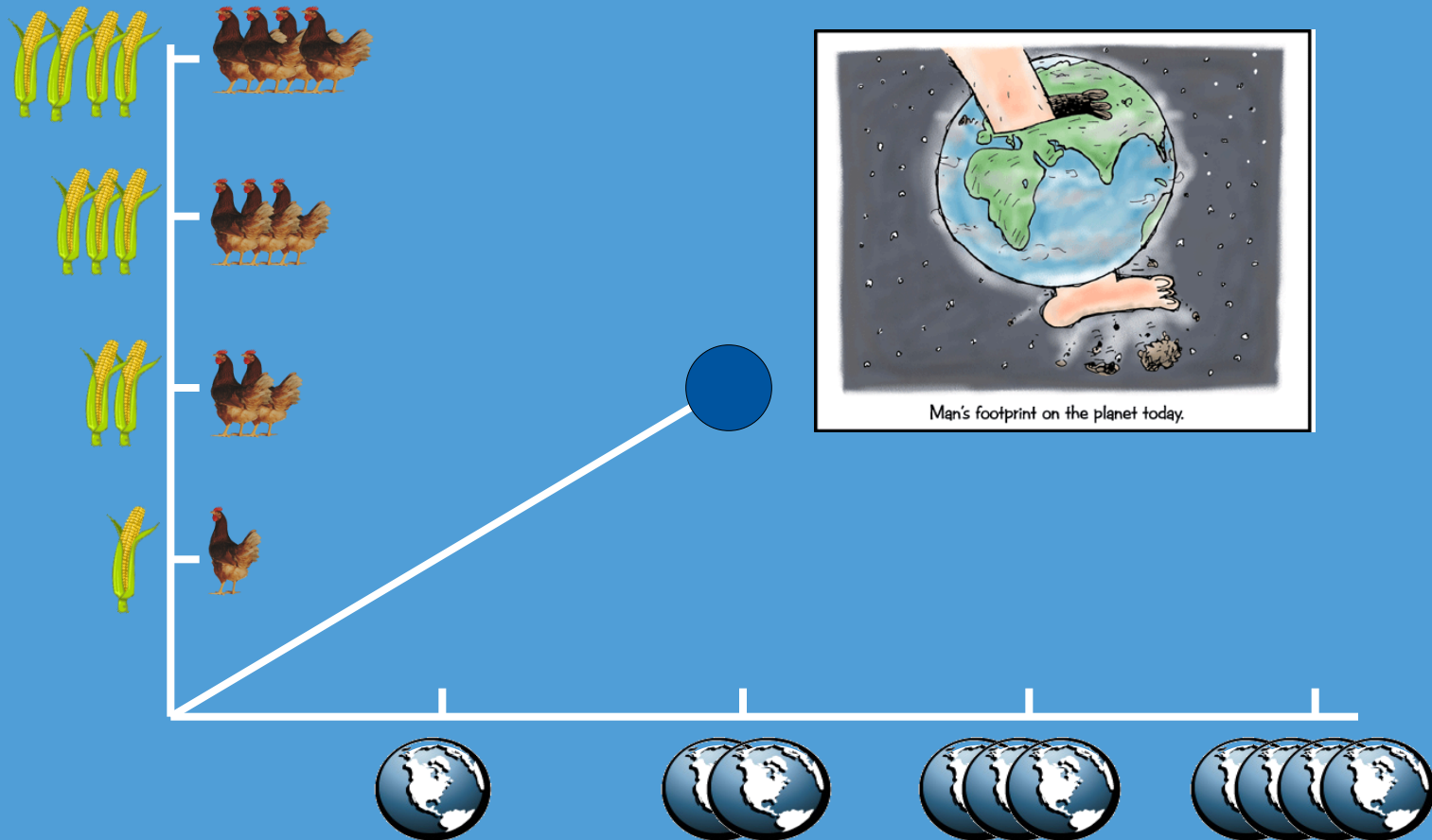
- More production with less input:
  - feed and grazing
  - animal welfare
  - breeding
  - housing
  - manure processing and GHG emissions
- Sustainable dairy production (Env. + Ec. + Soc.)
- New product market combinations
- Redesign of animal husbandry







# We are exceeding the carrying capacity







20:54

leif.zenger



53%

3 RETWEETS 1 FAVORIET



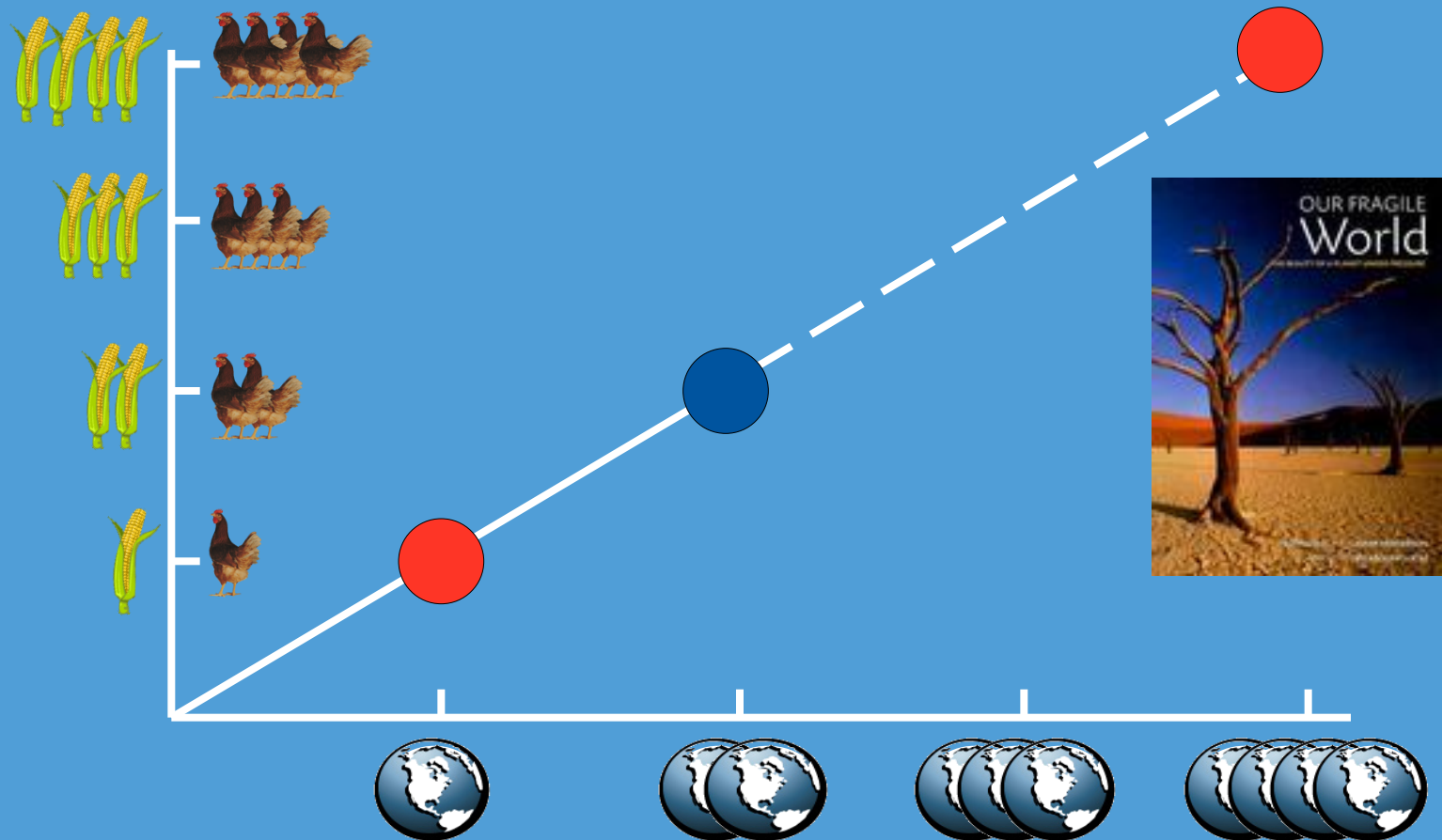
TractorPicsDaily @TractorPictures  
#towing #big

21-08-14

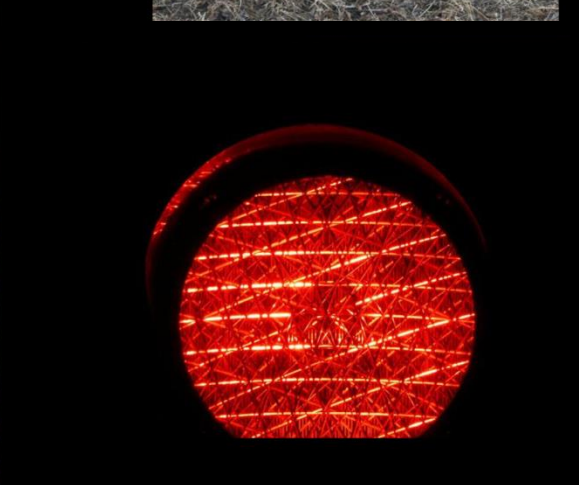
3 RETWEETS 10 FAVORIETEN



# Reducing or increasing production: not an option

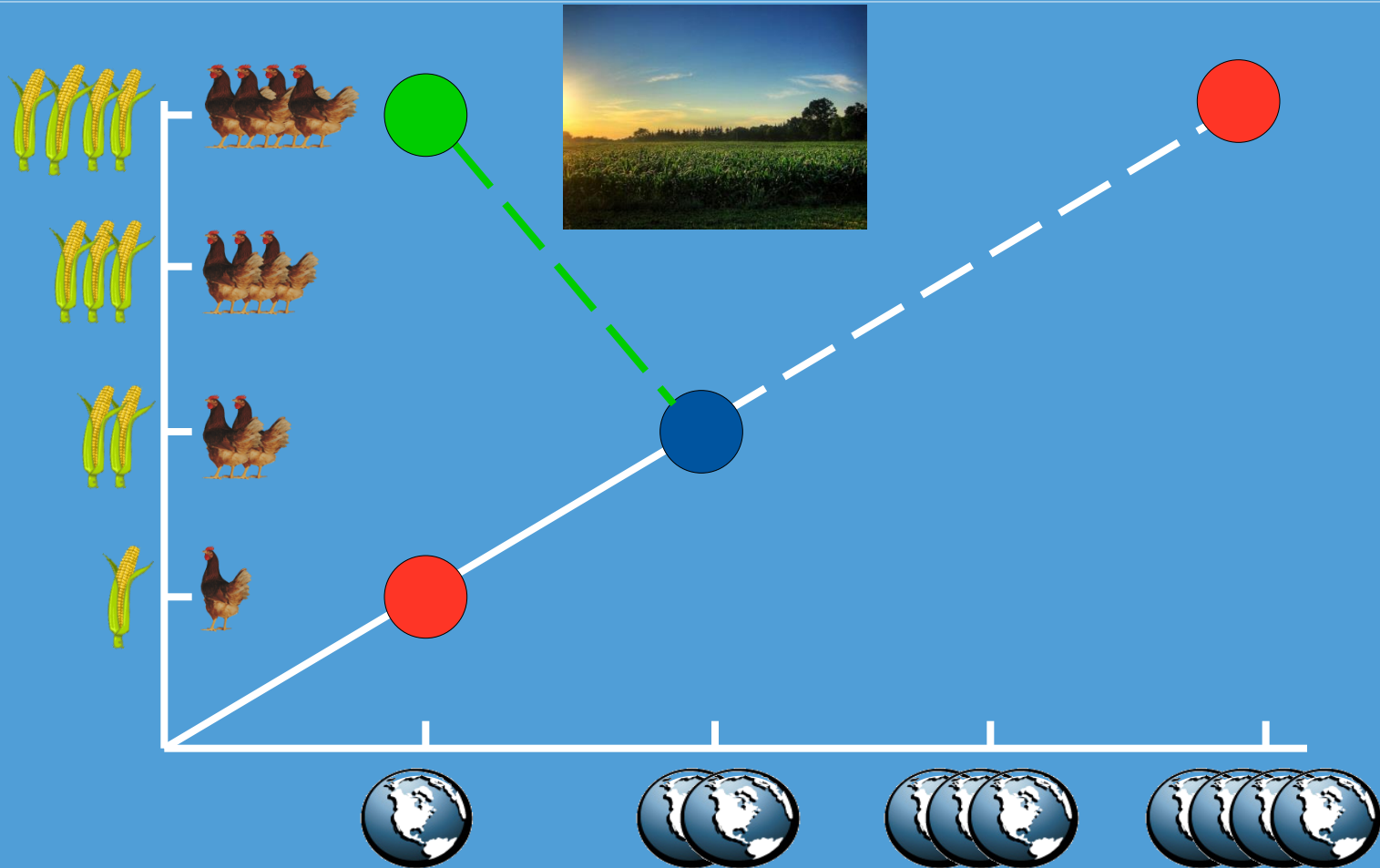








# But we can make a shift in another direction



# A double task is a challenge for all of us



*Feeding the world  
within the carrying  
capacity  
of planet earth*



**2x2**

- Doubling Production
- Halving Ecological Footprint



# Main challenges dairy production

- Reducing emissions (N, P, NH<sub>3</sub>, CO<sub>2</sub> and CH<sub>4</sub>)
- Disposal of excess manure (€ 10 – 20 / ton)
- High land prices (€ 50.000 - €80.000 / ha)
- High investments in expansion (from 80 to 150-200 cows/farm)
- Milk price volatility
- Rising feed costs
- Less direct payments CAP EU



Yes we can, because we did it in the past!



# Sustainability issues in Dutch dairy farming

## ■ Environment

- Local: manure surplus, ammonia, nitrate, dust;
- Global: climate change

## ■ Animal Welfare

## ■ Economy

- Profit & continuity
- Labor (quantity & quality)

## ■ Use of natural resources & biodiversity

- Global footprint, LCA, GHG
- Limited resources (energy, minerals)

## ■ Health (of man and animal)

- Veterinary risks; antibiotics and residues; hormones

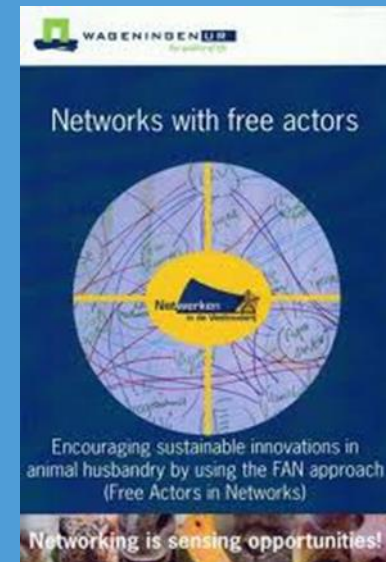




**Figure S.1** Summary of the state of progress in 2014 towards

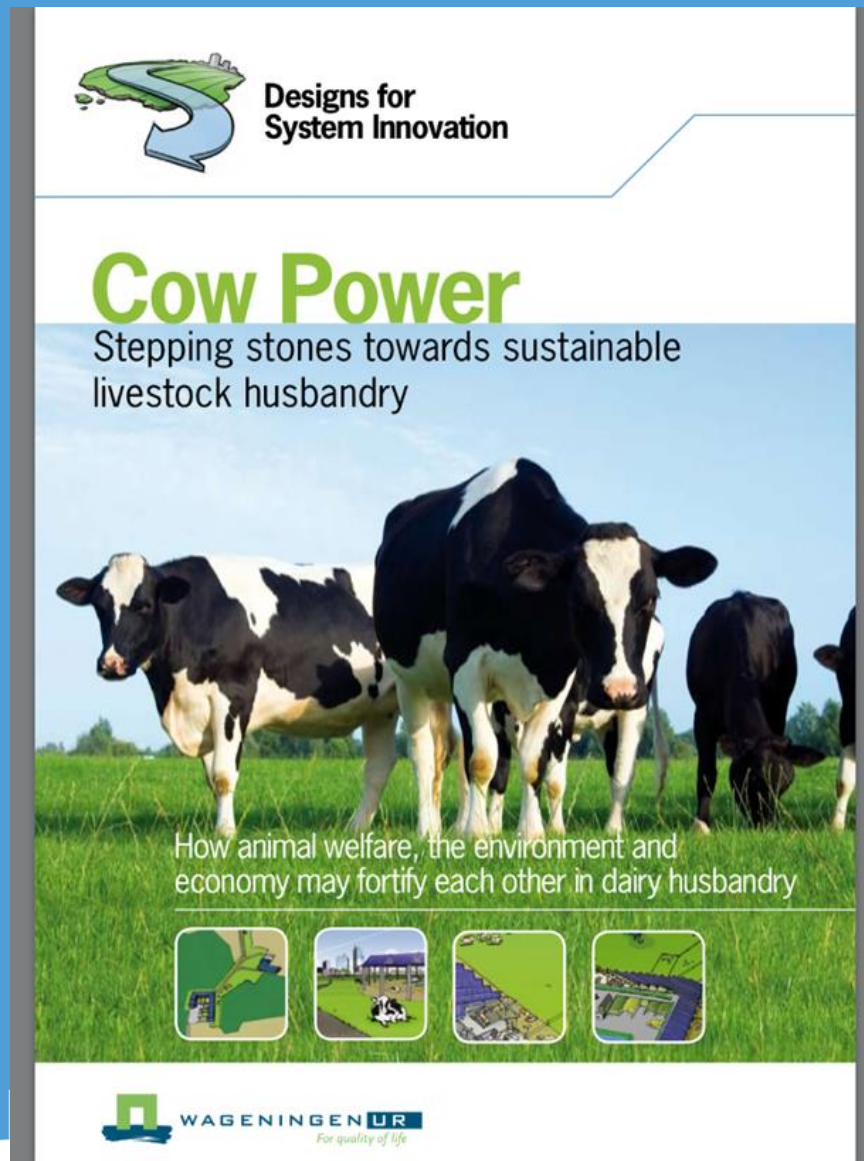
# Some research projects sustainable dairy

- Cows & Opportunities
- Annual Nutrient Cycling Assessment (ANCA)
- My Sustainability
- AMS + Grazing
- Amazing Grazing
- Smart Dairy Farming
- Animal Husbandry Networks
- EDF / GDF / IFCN a.o.





# Cow Power



<http://edepot.wur.nl/12251>







# A. All needs of the cow



- Enough space all year round
- Enough resting place(s)
- Freedom of choices
- Sufficient floors
- Locomotion
- No stress treatments or injuries
- Enough feed / good quality





## B. Minerals are useful products



- Use of plants
- No power of feed
- Separate faeces and urine
- No artificial fertilizer
- More organic drymatter and better quality of life in soil

## C. Share €, labour and land



- Space for cow without an expensive stable
- Shared investments in milking parlour, machines, land, etc
- Co-operation
- Higher yield in grass- and cropproduction
- Energy production
- Higher quality of labour
- New functions

## D. Soil is ecosystem



- Use organic drymatter in manure
- Intensification and extensification on the same farm
- Optimize management of N fertilizer (quantity, type of fertilizer, exact gifts at right place, etc)
- Minimize tillage
- No soil compression

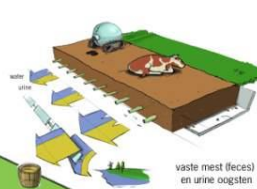
# De Meent

## Jaarrond de ruimte

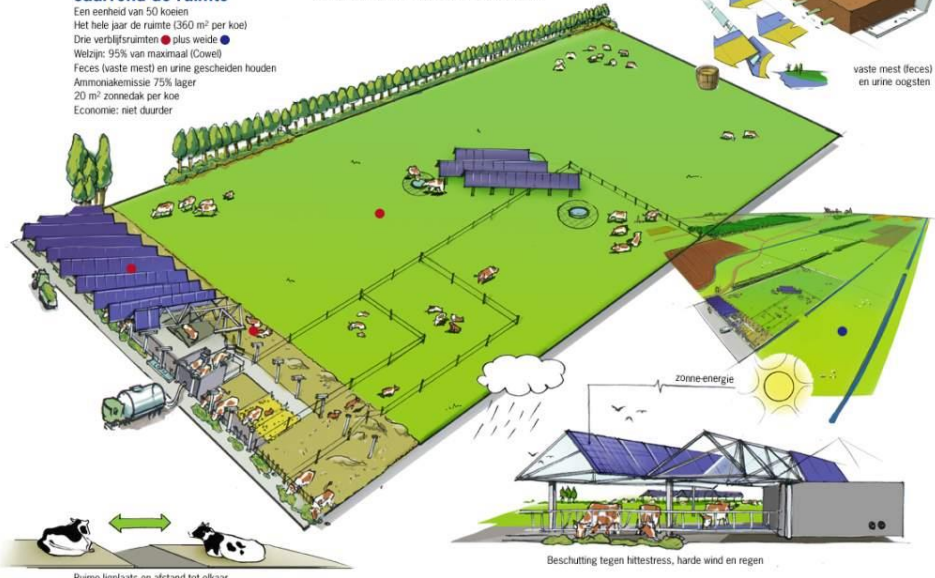
Een eenheid van 50 koeien  
Het hele jaar de ruimte (360 m<sup>2</sup> per koe)  
Drie verblijfsruimten • plus weide •  
Welzijn: 95% van maximaal (Cowel)  
Feces (vaste mest) en urine gescheiden houden  
Ammoniakemissie 75% lager  
20 m<sup>2</sup> zonnedak per koe  
Economie: niet duurder



Ruimte voor beweging, vrije keuze en sociaal gedrag



vaste mest (feces) en urine oogsten



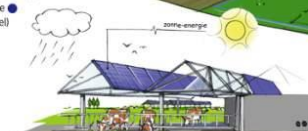
Beschutting tegen hittestress, harde wind en regen

Ruime ligplaats en afstand tot elkaar

# De Meent XL

## Voor wie groter wil

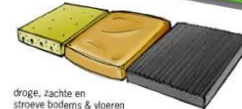
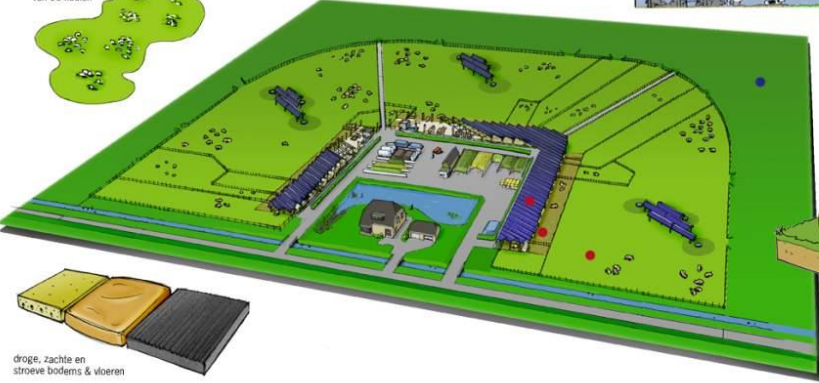
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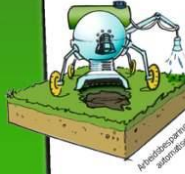
Beschutting tegen hittestress, harde wind en regen



Stabiele kuddes van 50 koeien



droge, zachte en stroeve bodems & vloeren

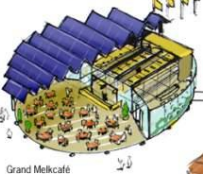


Automatische melk

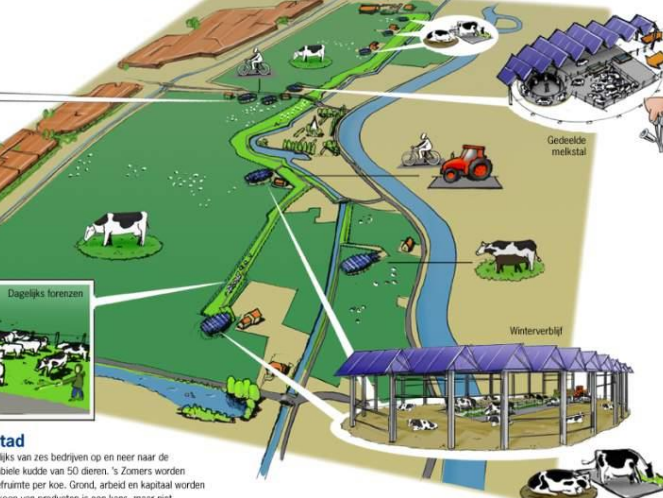
# Amstelmelk



Opslag en eten



Grand Melkcafé



Dagelijks forenzen

Gedeelde melkstal

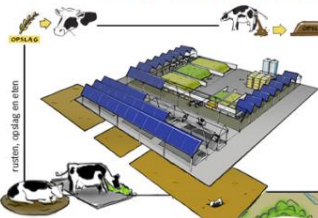


Winterverblijf

## De kracht van koeien bij de stad

Melkveehouderij aan de stad. 300 koeien trekken dagelijks van zes bedrijven op en naar de gezamenlijke melkstal. De bedrijven hebben elk een stabiele kudde van 50 dieren. 's Zomers worden de koeien geweid, 's winters is er minimaal 13,5 m<sup>2</sup> leefruimte per koe. Grond, arbeid en kapitaal worden gedeeld, met elkaar en met de nabije stad. Directe verkoop van producten is een kans, maar niet economisch noodzakelijk.

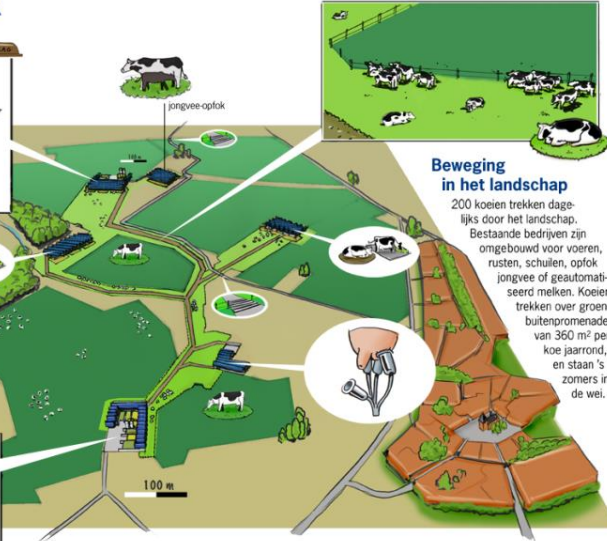
# De Bronck



Opslag en eten



Opslag en eten



jongvee-optok

## Beweging in het landschap

200 koeien trekken dagelijks door het landschap. Bestaande bedrijven zijn omgebouwd voor voeren, rusten, schuren, opfok-jongvee of geautomatiseerd melken. Koeien trekken over groene buitenpromenades van 360 m<sup>2</sup> per koe jaarrond, en staan 's zomers in de wei.









For quality of life





# Cow Garden

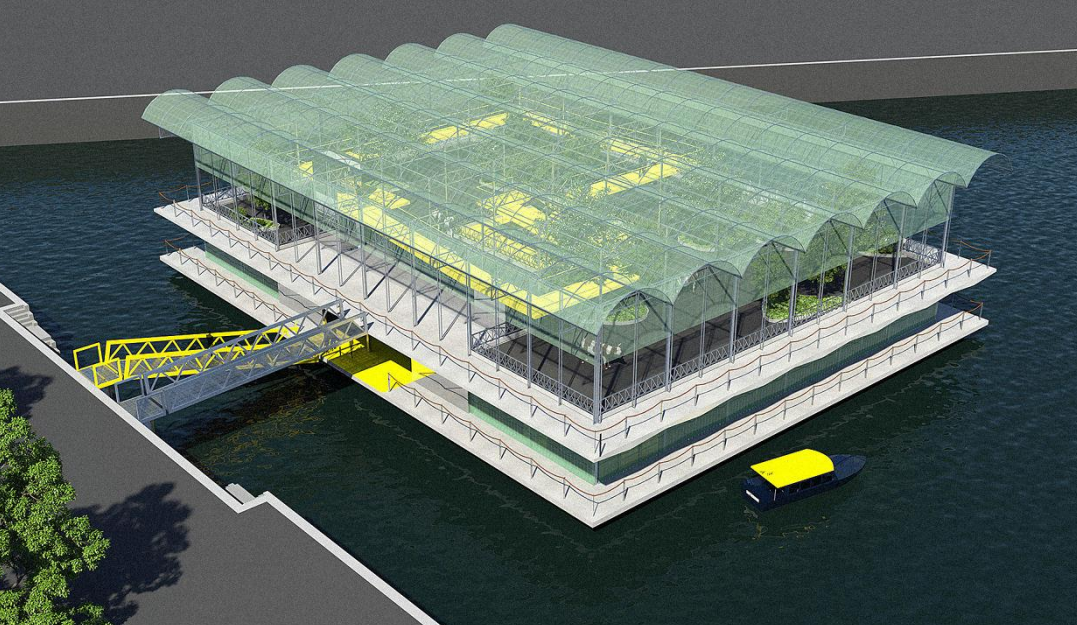




# Cow Garden







Zuivelwand

Vergader en educatieruimte

Melkrobot

Koeientuin

Rij-zone voerrobot

Goederenlift  
voor productie uit kas,  
kelder en melkfabriek.  
Tevens minder valide  
mogelijkheid

Rondloop bezoekers



# More information

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