

# The role of the researcher in facilitating innovation

*EAAP Davos, 31 august 2021*

Paul Galama



# Topics

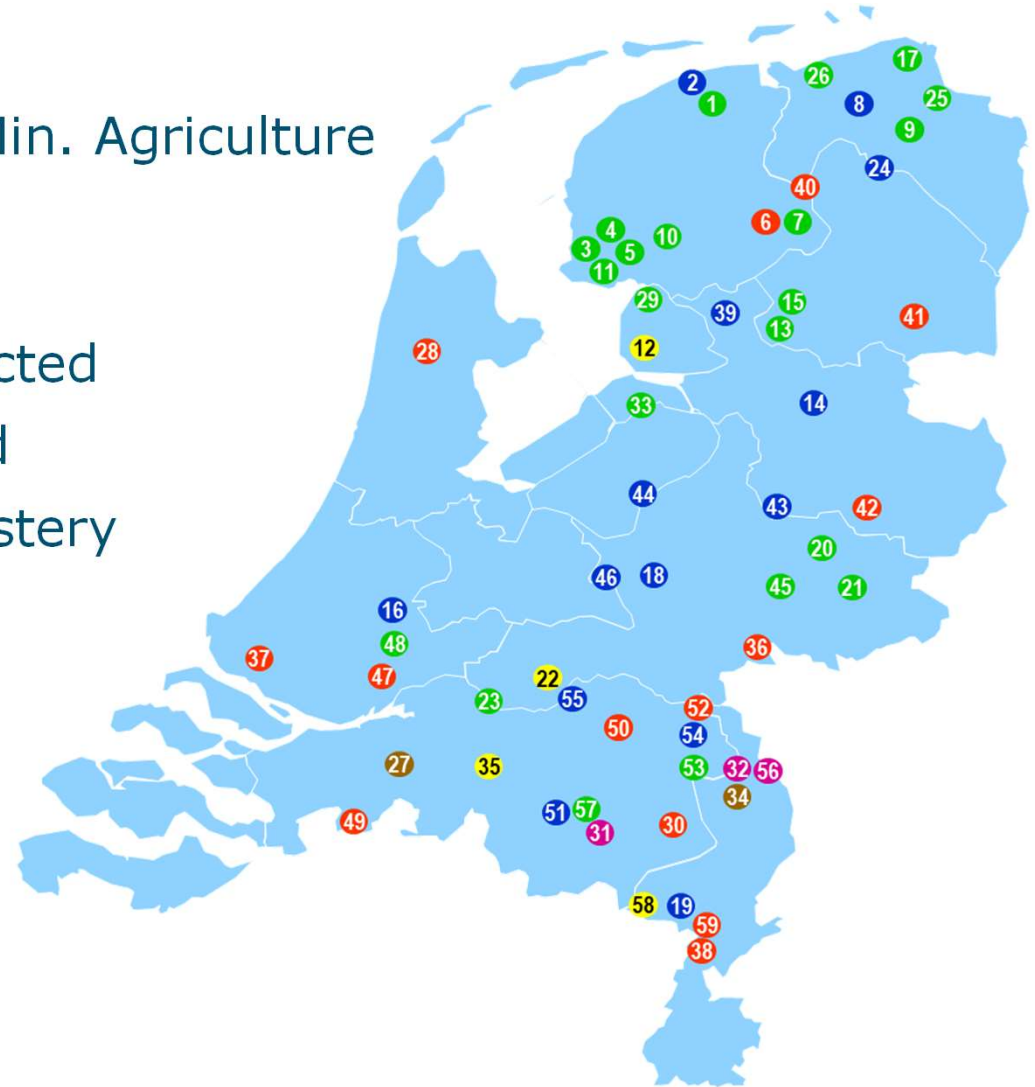
1. Network approach with free actor
  1. Learning process (DEED method)
  2. Example Housing
2. Examples to inspire
3. Example how are farmers affected (RESET)
4. Examples international research and pilot farms



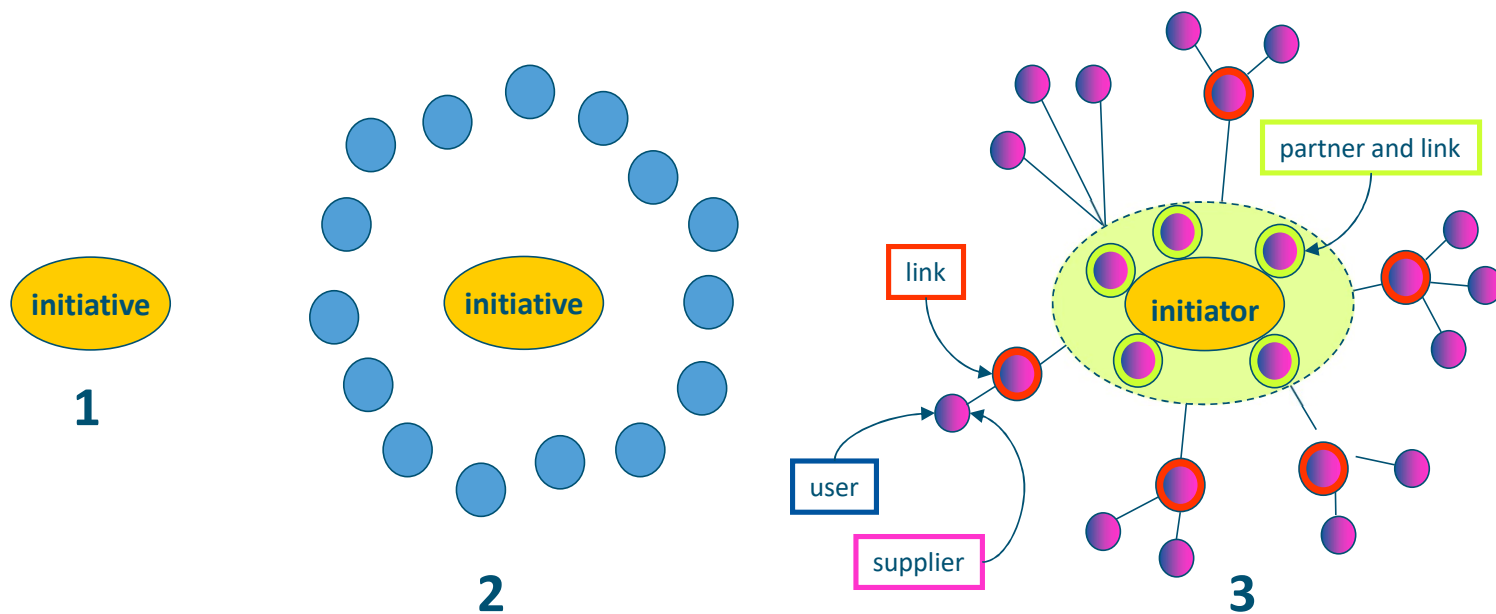
# Network approach

- Since 2004 demand driven research of Min. Agriculture
- Focus on entrepreneurs initiatives:
  - First year 167 applications, 50 selected
  - Until 2010 > 200 networks selected
  - Since 2010 subsidy scheme of Ministry

- Dairy
- Pigs
- Poultry
- Horses
- Rabbits
- Other

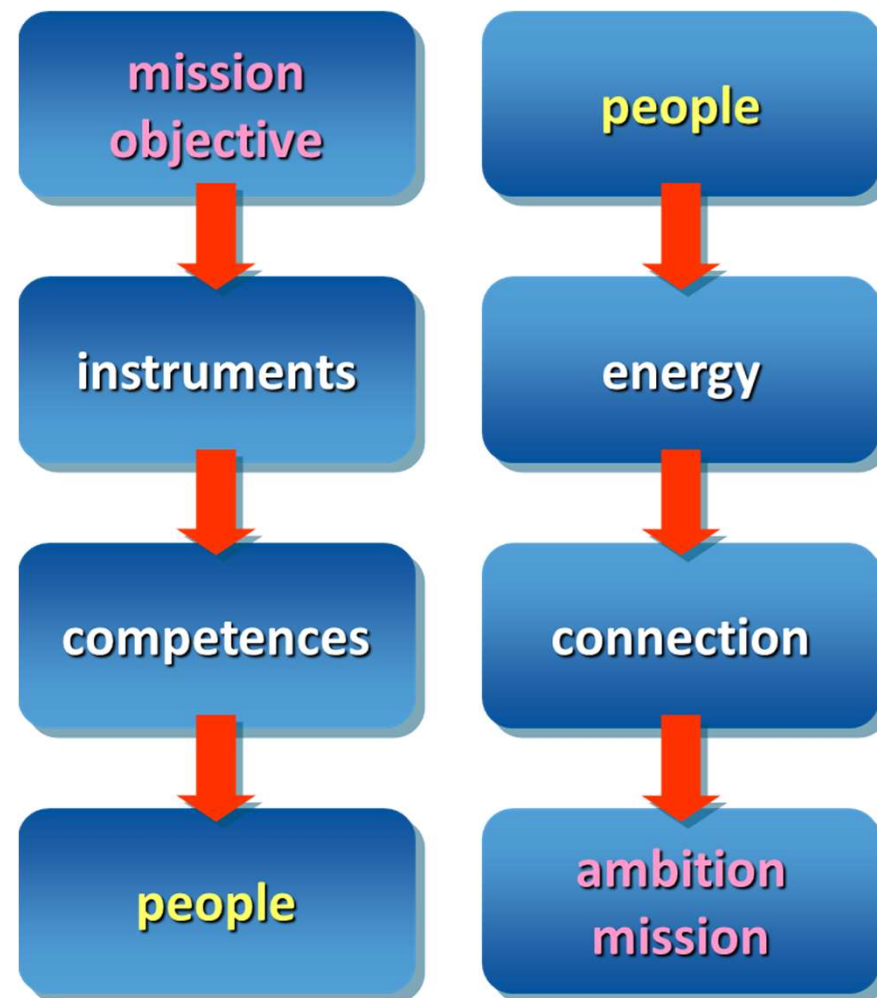


# It starts with an initiative.....



# Network approach

- Role of researcher
  - Free actor
  - Inspiration
  - Expert
  - Reflection
- Co creation of knowledge (researchers and network)



Difference between organisation and network

## Tools for free Actor

Analysing of the network  
Development of innovation  
Focus on energy  
Focus on connection

## Networks with free actors



Encouraging sustainable innovations in animal husbandry by using the FAN approach (Free Actors in Networks)

**Networking is sensing opportunities!**

# Example housing

## Why bedded pack barns?



Freestall (with cubicles)



Freewalk (Bedded pack barn)

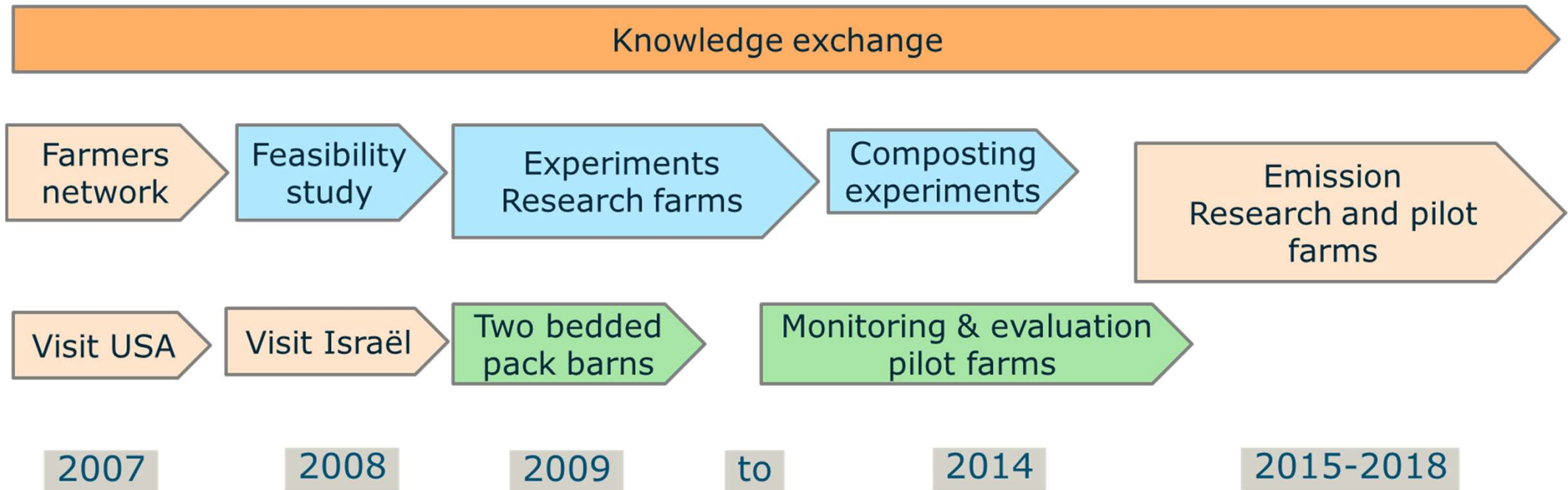




## Inspiration from other countries



# Overview research and knowledge exchange



### 3 Experiments on experimental farms



1. Composting: wooden chips and sawdust



2. Drainage with sand



3. Absorbing with peat ground and reed

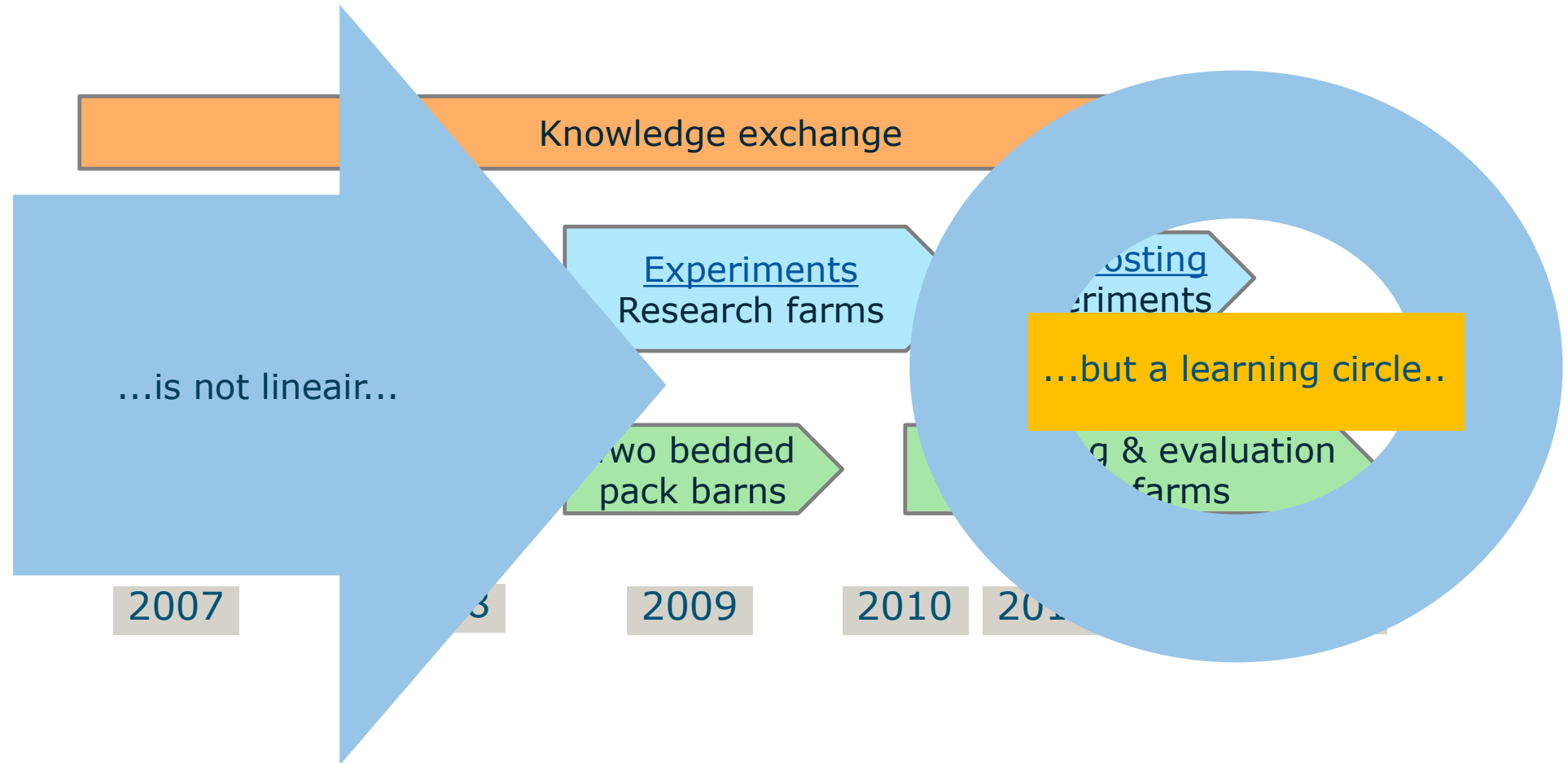


Cows in Green house with folie

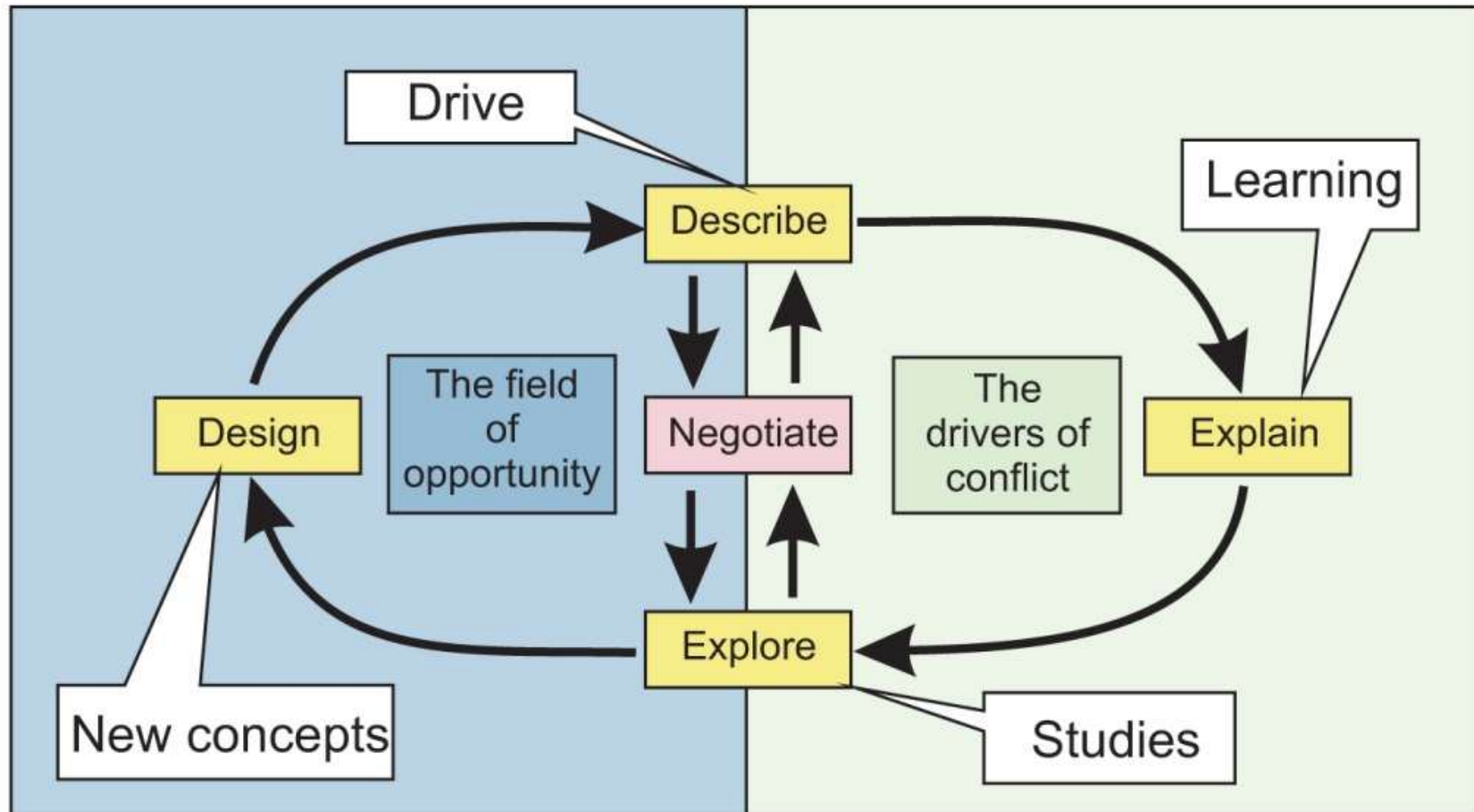
# Research on 10 pilot farms



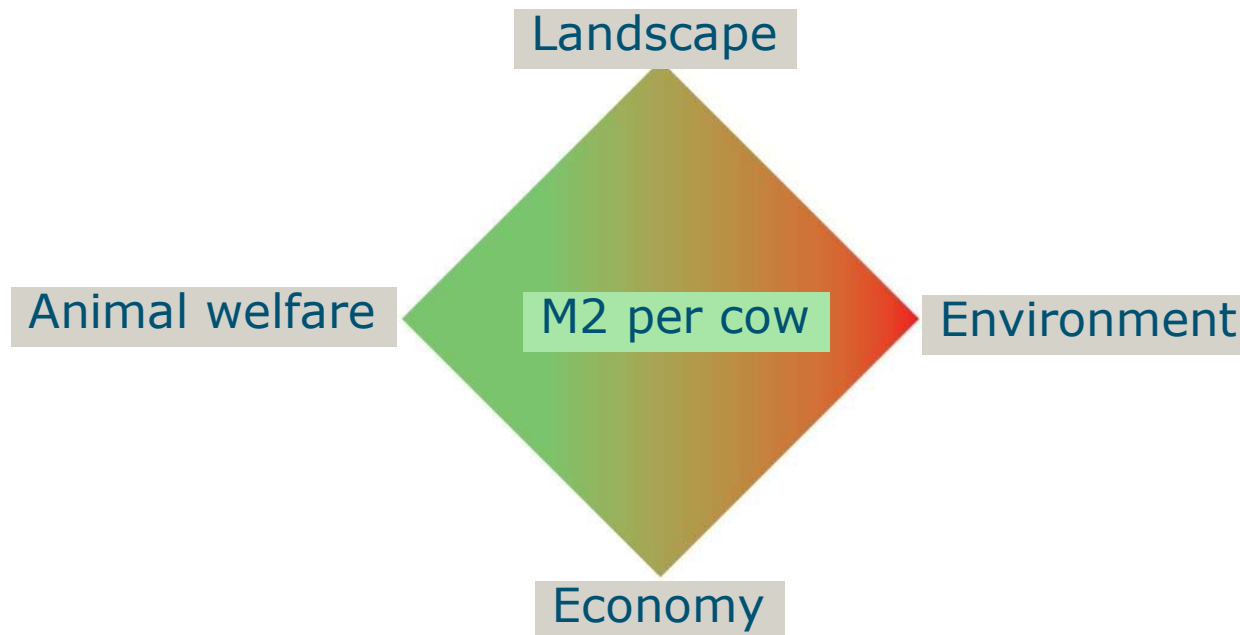
# Innovation and learning proces.....



# Learning process (DEED methode)



# Drivers and conflicts





# Composting

(make 'compost in the stable) wooden chips with aerating sys

Aerating system

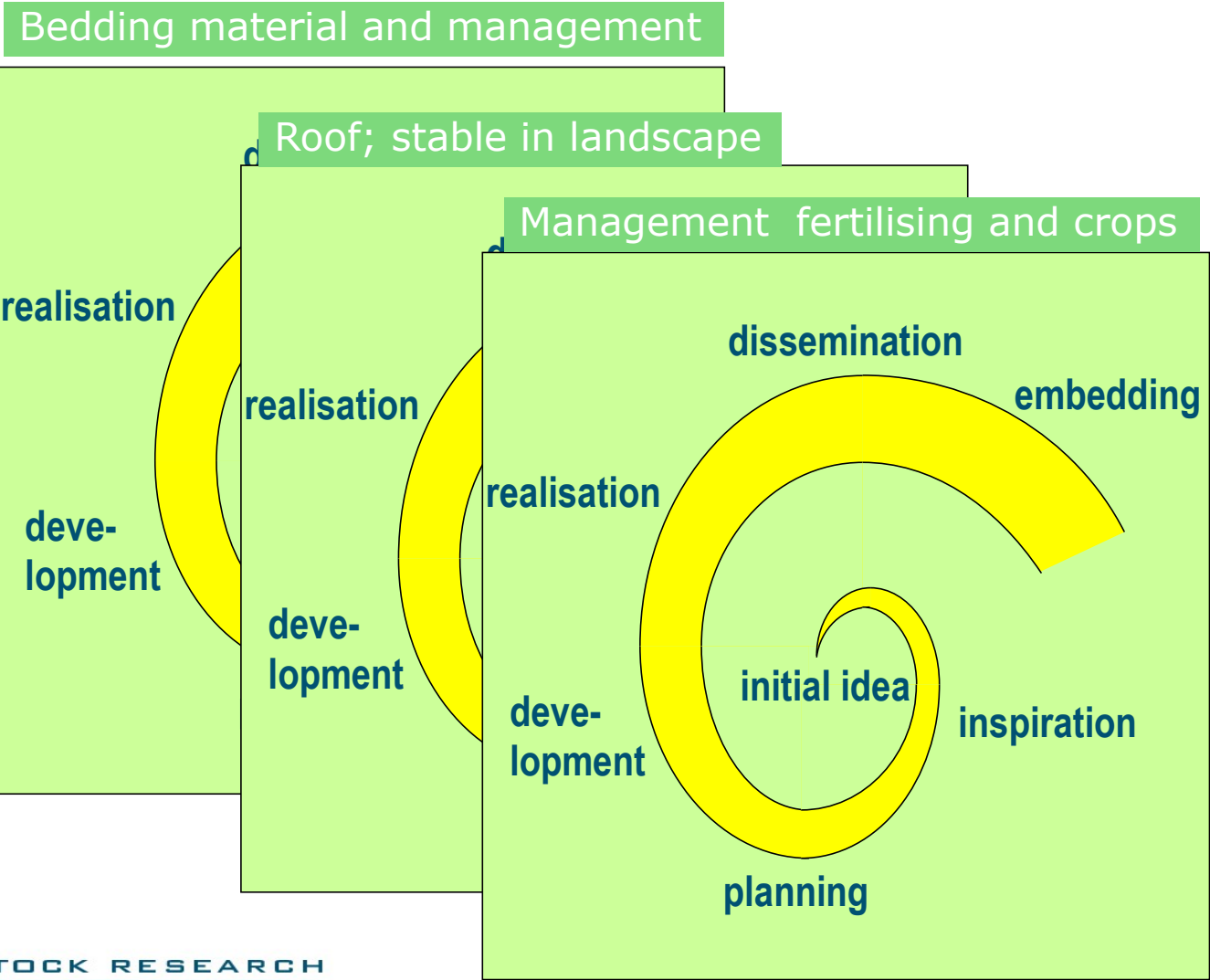


## What did we learn?



Too much aerating  
gives too much ammonia emission





# Example of landscape



## What did we learn? (proces)

- Free actor important to make connections
- Don't put idea too fast on research agenda
- Farms visits worldwide gives a lot of inspiration
- YouTube video has a great impact
- Combination of small experiments and participatory research works well
- One innovation initiates another innovation
- Be aware of trade offs

Therefore design based on needs (cow, farmer, environment)

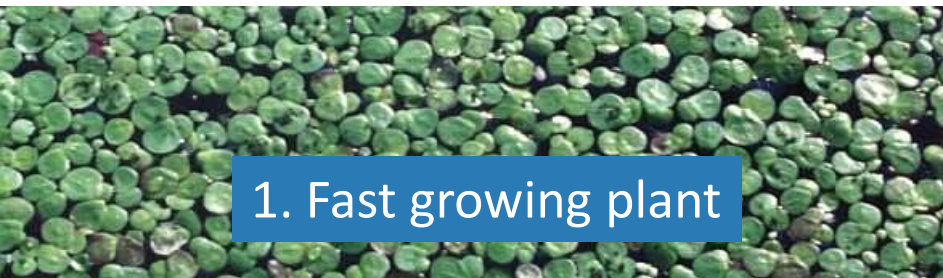
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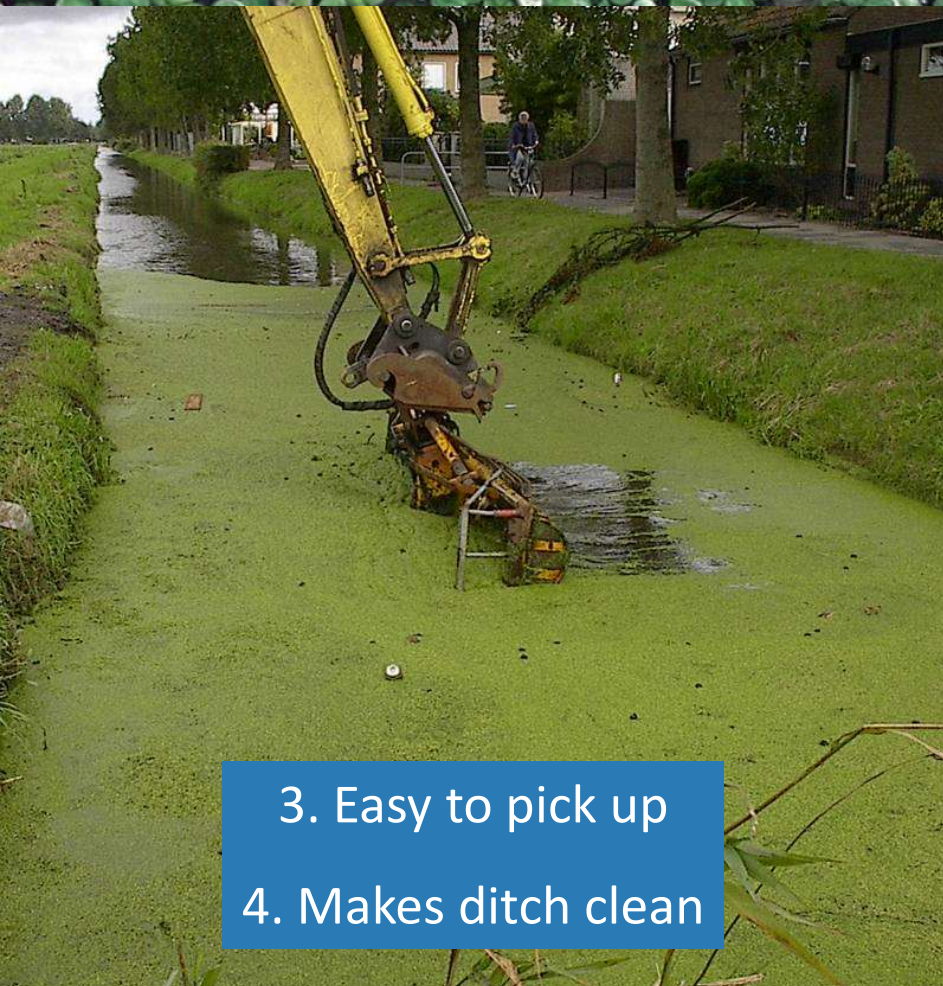
# Workshop to select 2 ideas out of 20

- Why
- What
- Advantages
- Disadvantages
- Development points





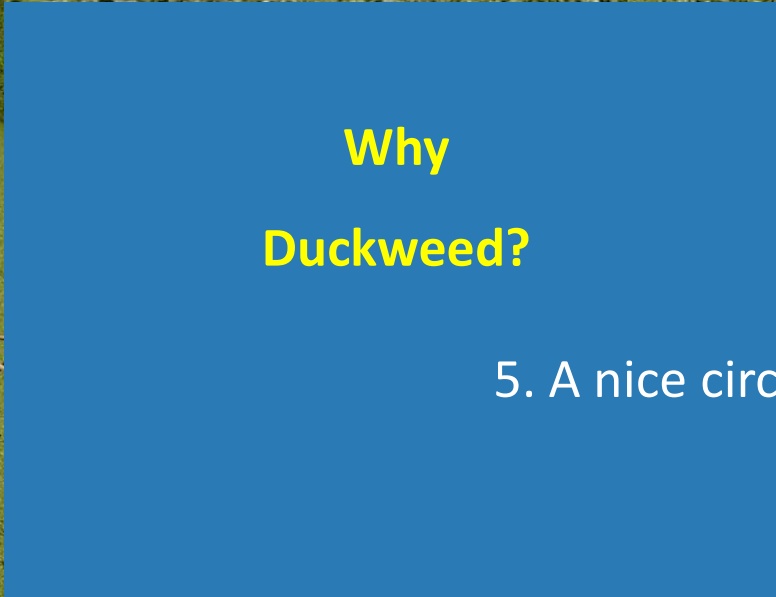
1. Fast growing plant



3. Easy to pick up  
4. Makes ditch clean



2. Interesting protein source  
For cows, pigs, poultry, goats, sheep and fish



Why  
Duckweed?



5. A nice circular thought

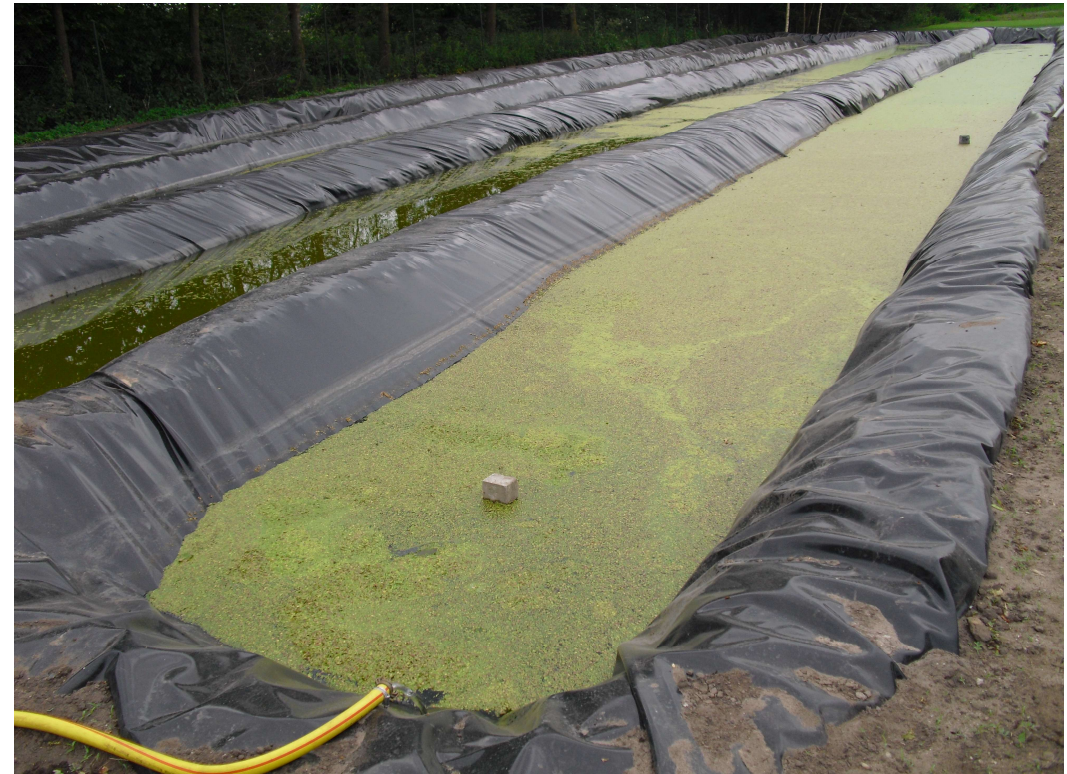
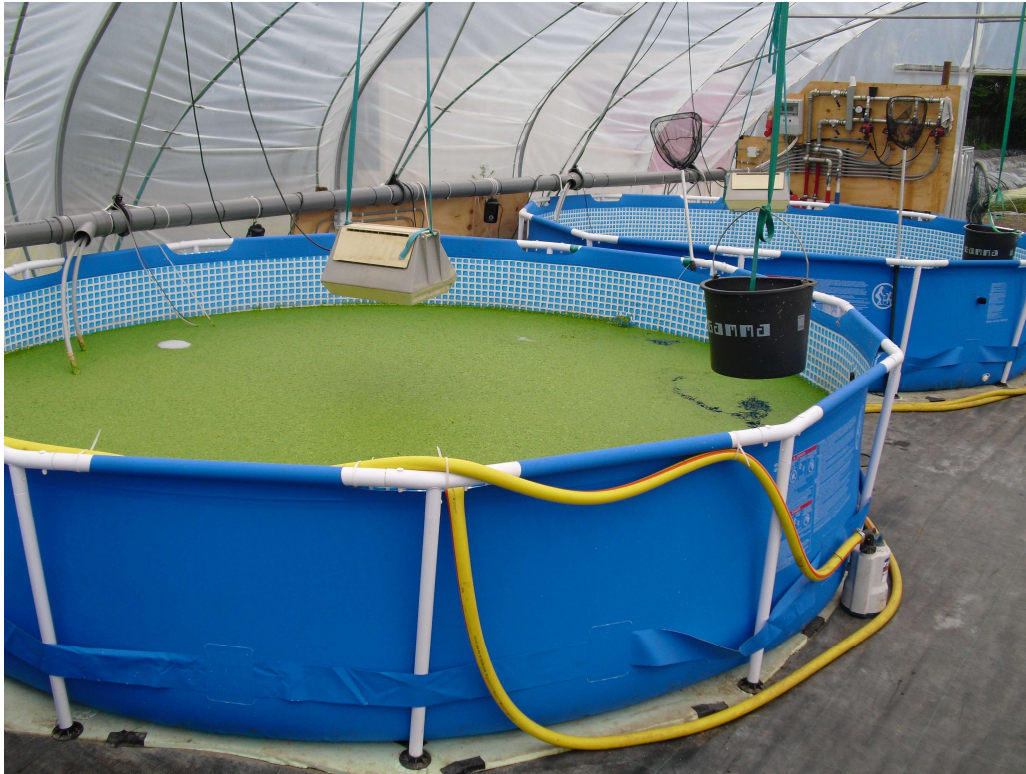
# Risks

- Heavy metals
- Pathogens
  - Salmonella,
  - Botulism, E-Coli
  - Para TBC





# Cultivation duckweed at commercial farm



# Example amazing grazing

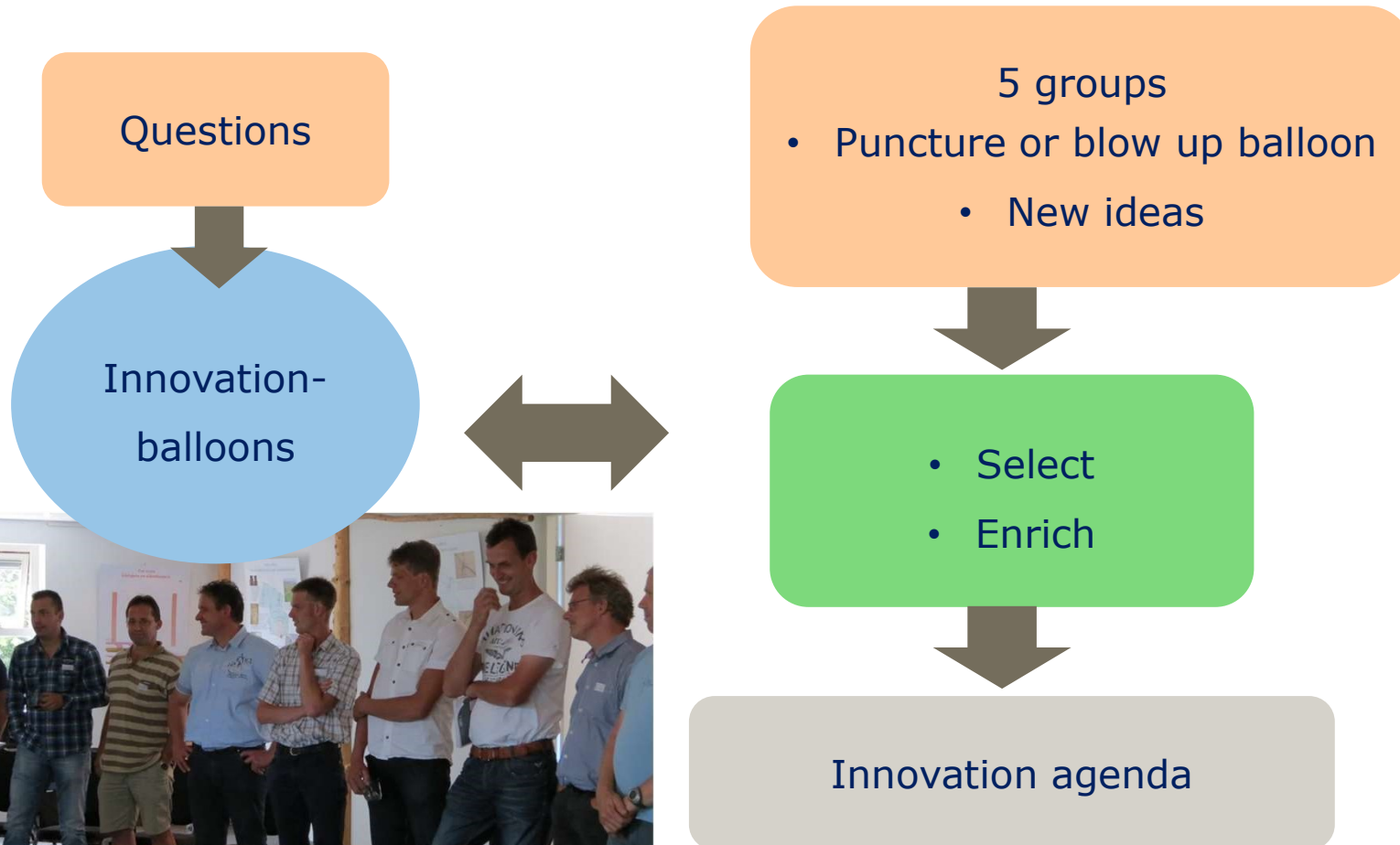
## Why Amazing Grazing?

- Decline of grazing cows
  - Large herds
  - Milking robots
  - Control high production

- Need for innovations
  - Tools to support management
  - Farming systems  
(low cost and high tech)
  - Techniques



# From ideas to innovations topics



# An example of a different view of scale

Book

Cooperation WUR and magazine Veeteelt

24 auteurs

## ANDERS GROEIEN

Een ontdekkingsreis naar nieuwe groeirichtingen in de melkveehouderij



**Hoe kunt u het boek bestellen?**  
Het boek kost €19,95 exclusief €1,- verzendkosten. Anders Groeien is in Nederland te bestellen door €24,95 over te maken op bankrekeningnummer 38.39.05.230 van CRV in Arnhem o.v.v. bestelling Anders Groeien en het adres waar u het boek naartoe wilt laten sturen. Leden van CRV in Nederland kunnen ook contact opnemen met CRV Klantenservice op nummer (088) 002 44 40. Leden in Vlaanderen kunnen contact opnemen met de Klantenservice op nummer (070) 15 44 44-soets 1.

**Meer informatie?**  
Voor nadere informatie of reactie op het boek kunt u contact opnemen met Paul Galama van Wageningen UR Livestock Research: paul.galama@wur.nl

Wat vindt de melkveehouderij van nu? Zijn we nu aan een omslag? Dit boek helpt u om te zien waar anders groeien, maar geeft ook waarschuwingen. Twintig auteurs beschrijven vanuit hun deskundigheid best practices en aandachtspunten voor een duurzame toekomst. Zij leggen uit hoe groeien anders kan, anders kan en anders moet. Schaalvergroting gaat in steeds hoger tempo, maar niet op:  
• het gaat niet om schaalvergroting, maar om duurzame ontwikkeling;  
• het gaat niet om het naar het buitenland groeien van wat het anders kan;  
• het gaat om een gezamenlijke aanpak.

**Wat betekent van anders groeien?**  
De voorbeelden van anders groeien zijn tijdelijk volgens deze groeirichtingen. De ene richting heeft betrekking op, waarom ga je schaalvergroten? De andere richtingen betreffen de manier waarop de melkveehouderij kan groeien.







1. Dairy farmer sells grass and maize to feed centre

...in container..



2....truck picks up container...  
Feed centre stores roughage...

Pilot  
Regional  
Feed centre



3....and stores feed components..  
and grain from arable farmers



4....and makes total mixed ration (TMR)  
...and delivers it to 3000 cows on 28 farms

# Example open days





**WELCOME TO  
OUR OPEN DAY**

**DISEASE CONTROL  
PLEASE USE  
FOOTBATH**



	2009	2010	2011
Milk sales (kg MS)	20,184	18,638	21,730
Milk price (€/kg MS)	4.46	3.32	5.04
Milk receipts (€)	90,060	61,741	109,730

### Risk Management Plan

- Put in place a set of mitigation strategies:
- Milk price volatility
  - Weather extremes
  - Below average production performance

Strategy	Risk	Return
Grow more grass	Low	High
Increase milk solids/cow	Low	High
Specialise more	Mod	High
Buy in Feed	Low	Low
Increase milking platform	Mod	High
Set up another unit	High	High



**Success**

*'You will earn what you learn'*

- P&K fertiliser 152%
- Grazing 96%
- Supplementation 3.2%



Padraig French  
Head department *Livestock systems*

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# How are farmers affected to reduce ammonia emission?

RESET	Less young stock	More grazing	Manure apply good weather	Dilute manure with water	Less protein ration	Less protein grass
Rules	+++					
Education		+	+	+++	+++	+
Social pressure		+	++	+	++	+
Economics	++	+++	+	+++		
Tools			+	+	+	

What did I learn?





Pilot farmers want inspiration

Followers want advise

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# Experimental farm -> Commercial farms-> Sector

-  clay
-  peat
-  sand
-  loess



# Results and impact

- Measures for environment and economics
- Very low (fertilizer) input in dairy sector
- Derogation
- Farm specific tools (excretion, ANCA) and pilots
- Acceptance of policy in dairy sector
- Acceptance of Dutch policy in The Hague and Brussels





# ANCA tool on farm level

## Annual Nutrient Cycling Assessment



Gives insight in:

- NPC efficiency in parts of cycle
- Crop production
- Pollution soil, air and water



# ANCA is a joint effort of the dairy sector and.....

Role as researcher:  
R & D  
Create and use network



## Owner Central Database



## Partners



# International upscaling

- Dairyman
- EuroDairy
- Resilience for Dairy (R4D)

# EuroDairy Themes for innovation & best practice

TO IMPROVE

Efficiency

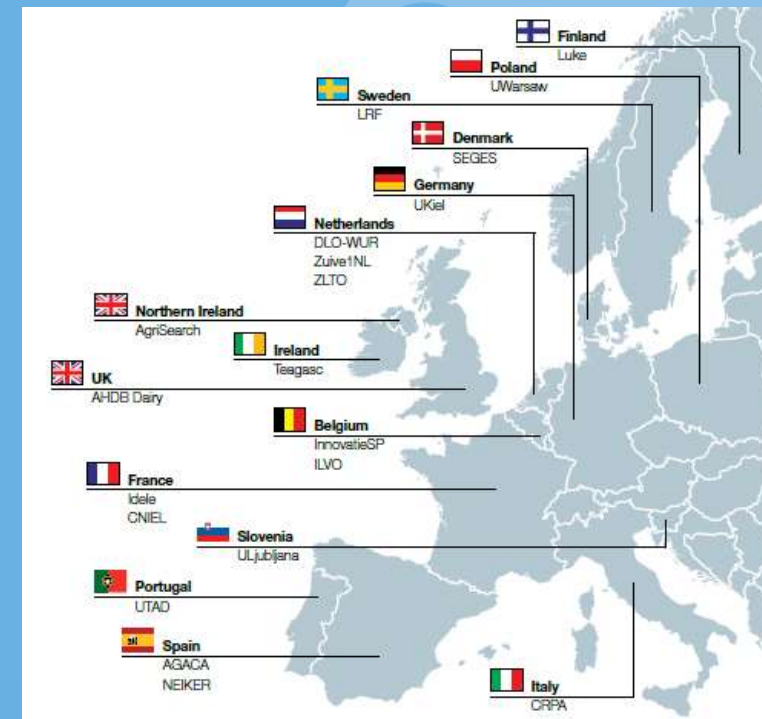
Animal Care

Socio Economics

Bidiversity



- Interactive approach
  - 'multi actor' groups
  - Farmer to farmer learning
  - Demonstration & testimony



20 partners, 14 countries

# European Union (EU)

R4D partners 



Valérie Brocard

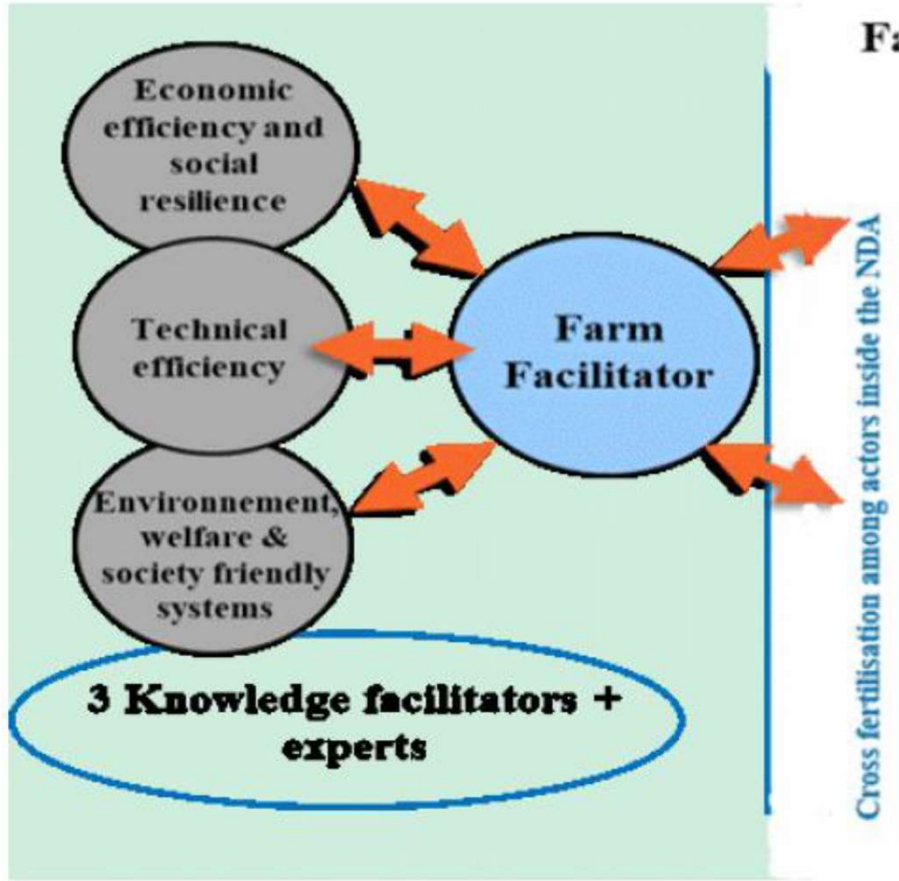


European Commission



LIVESTOCK RESEARCH  
WAGENINGEN UR





**Farm Facilitator: 1 key contact person per country**

Manages the national/regional network and actors  
Main contact with other EU "Farm Facilitators" and "Knowledge Facilitators"



# International upscaling

- Dairyman
  - EuroDairy
  - Resilience for Dairy (R4D)
- more involvement companies  
less data collection more knowledge exchange

# Take home messages

- Researcher has a role as free actor in network approach
- Innovation is a continues circle of design and redesign
- Be aware of trade offs (DEED):  
Designs are based on needs (cow, farmer, environment)
- A mix of research, pilot- and follower farmers, advisors, policy works best (RESET)
- Collaboration does not stop at the border



Imagination is the limit

Thanks

Paul.galama@wur.nl

Regional feed centre

Freewalk

Amazing grazing

Mobile milking robot

Duckweed

ANCA tool