

Circular agriculture

Progress in knowledge development to support the implementation

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The Netherlands



NATIONAL
GEOGRAPHIC™

| MAGAZINE |

THIS TINY COUNTRY FEEDS THE WORLD

The Netherlands has become an agricultural giant by showing what the future of farming could look like.



From Explorative Concepts to Viable Practice



Agriculture, nature and food: valuable and connected

The Netherlands as a leader in circular agriculture



Plan of action New perspective for agriculture, nature and food quality

The Dutch government's Vision on Circular Agriculture sets out the ambition of the Netherlands to be a global leader in circular agriculture in 2030. The vision entails a paradigm shift from growth in production volumes and cost price reductions towards optimisation in resource use and food production in harmony with nature. The government has now published its plan of action to turn this vision into reality.



BRINGING CIRCULAR AGRICULTURE IN PRACTICE

- Improving soils and water quality
- Reducing emissions and pollutants
- Closing nutrient cycles
- Collaboration at regional level
- Collaboration along the agriculture and food supply chain



POLICY EFFORTS TO SUPPORT CIRCULAR AGRICULTURE

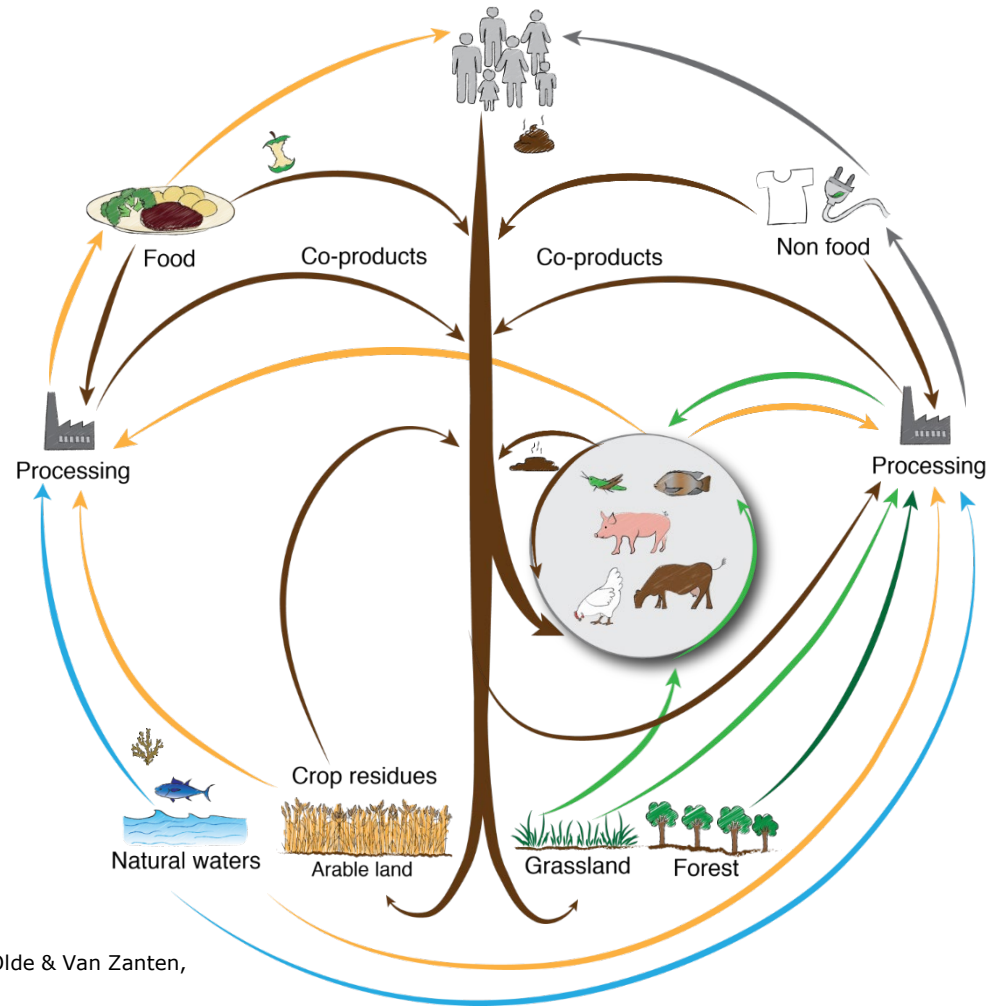
- Promote precision agriculture and farm innovations
- Creating more possibilities for experimentation
- Focus Common Agricultural Policy on vision targets
- Utilise public land
- Promote re-usage of food nutrients, a.o. by adapting regulations
- Reward sustainable farming practices
- Support short supply chains



Netherlands as global leader in circular agriculture in 2030

WHAT IS NEEDED?

- A solid economic base for producers;
- A commitment to knowledge and innovation;
- Reciprocity between agriculture and nature;
- A strong international market position and capacity to innovate;
- Food and food producers are more valued;
- Favourable legislation and regulation.





Open cultivation in Circular Agriculture



System requirements

- Nature-inclusive cropping systems
- Minimal use of fossil-based fertilizer
- Minimize use of pesticides
- Optimal use of arable land for food

Response

- Crops that grow in strips
- Double purpose crops and rotations
- Robust crop rotations with healthy plants and soils

Challenges

- Best strip width 1.5 m
- High labour demand; robotisation?
- Need for new crop varieties; seed sector?
- New skills for farmers; education?





Livestock in circular agriculture



Overschot en restjes

Van restjes en overschot bij bakkerijen
maken we kippen- en varkensvoer

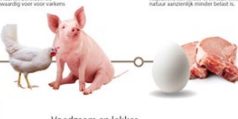


Speciaal transport
De vervoerskosten die nodig zijn voor
gespecialiseerd vervoer zijn laag



Hoogwaardig voer

In onze veevoeder kun je ook
melk en vlees krijgen van onze
kippen



Voedzaam en lekker

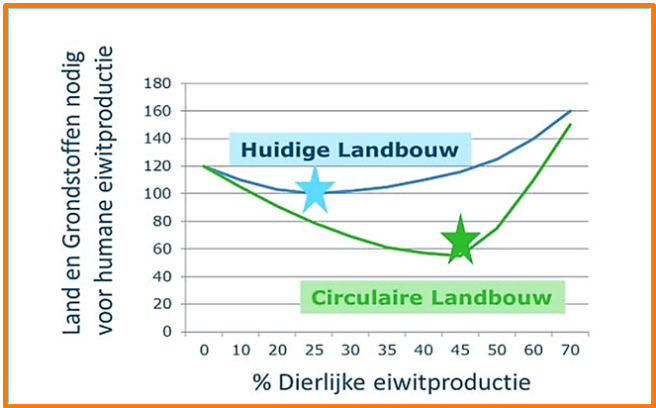
Bevat veel eiwit en vetten, dus
zijn varkens en kippen er graag
op toe

Smullen maar

Op onze veevoeder kun je ook
melk en vlees krijgen van onze
kippen



FEED



het
varkens
toilet



MANURE

DID you know....?



Potential of biomass streams from food processing, retail and catering, used for BSF production yields could replace typically 50 to 75 kton soy-beans.

(Vellinga et al. 2021)



Crushed feathers (chicken waste) improve resilience of sugar beets against soil pathogens

(Postma et al. 2021)



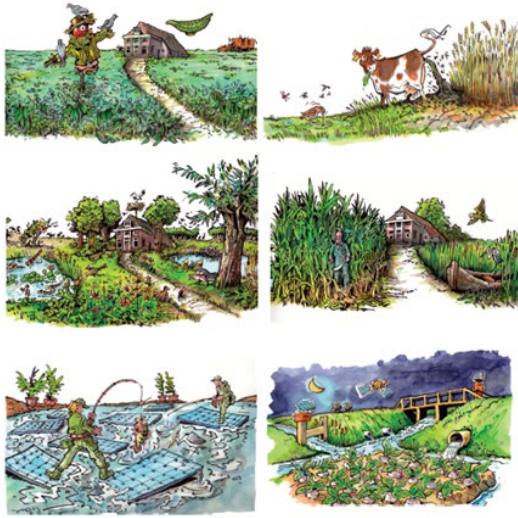
At farm add. **CO₂ seq. possible by increasing ex- & internal C supply.**

Dairy: increase the area of permanent grassland

Arable farms: external C supply is more cost effective

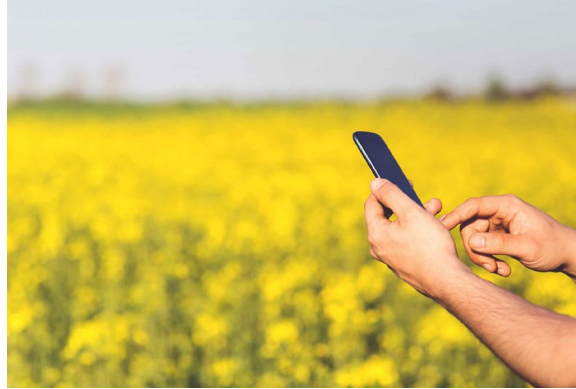
(Verhoeven et al. 2021)

DID you know....?



Economic and environmental 'good' alternatives exist for peatlands.

(Verstand et al. 2020)



EU farmers have higher trust on peers. Farmers build digital relationships with other farmers to form CoP. **Change their practice based on information by digital farmer influencers and validated by their peers**

(SoilCARE 2021)



196 pioneering farmers have adopted the circular principles, and proof it is possible to be a sustainable producer and earn a good income.

(Hoes and van Lauwere, 2020)

Transition recommendations; beyond the pioneers



Experiments are key in transition processes in practice. **Social learning** is the main function of experiments; yet there is a **poor exchange** of ideas and solutions between the experimental areas. Also, the exchange of experiences **to the non-experimental areas has not (yet) started**.

(Bouwma, 2021)



Many interventions have **long-term** business effects. **Difficult to compensate** for increased labor. **Few** circular business options will “*Sell Themselves*”. Circular innovations therefore require **more policy management** than ordinary innovations. A number of business options require **regulatory changes**

Thank you!

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