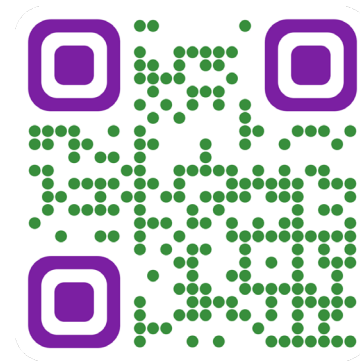




RES4LIVE

ENERGY SMART LIVESTOCK FARMING
TOWARDS ZERO FOSSIL FUEL CONSUMPTION



75th EAAP Annual Meeting
1/5 September 2024 - Florence, Italy



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No.101000785

SUSTAINABLE LIVESTOCK SECTOR UNDER CLIMATE TRANSITION (CT)

A bibliometric analysis

Anatoli Rontogianni, Panagiotis Grammelis

Centre for Research & Technology Hellas,

Chemical Process and Energy Resources Institute



CERTH
CENTRE FOR
RESEARCH & TECHNOLOGY
HELLAS

OUR BASELINE

regarding livestock sector under C.T.

- Greenhouse gasses (GHG) and its associated changes in mean climate variables → climate variability affect the animal feed supply chain, the water resources as well as animal health and production.

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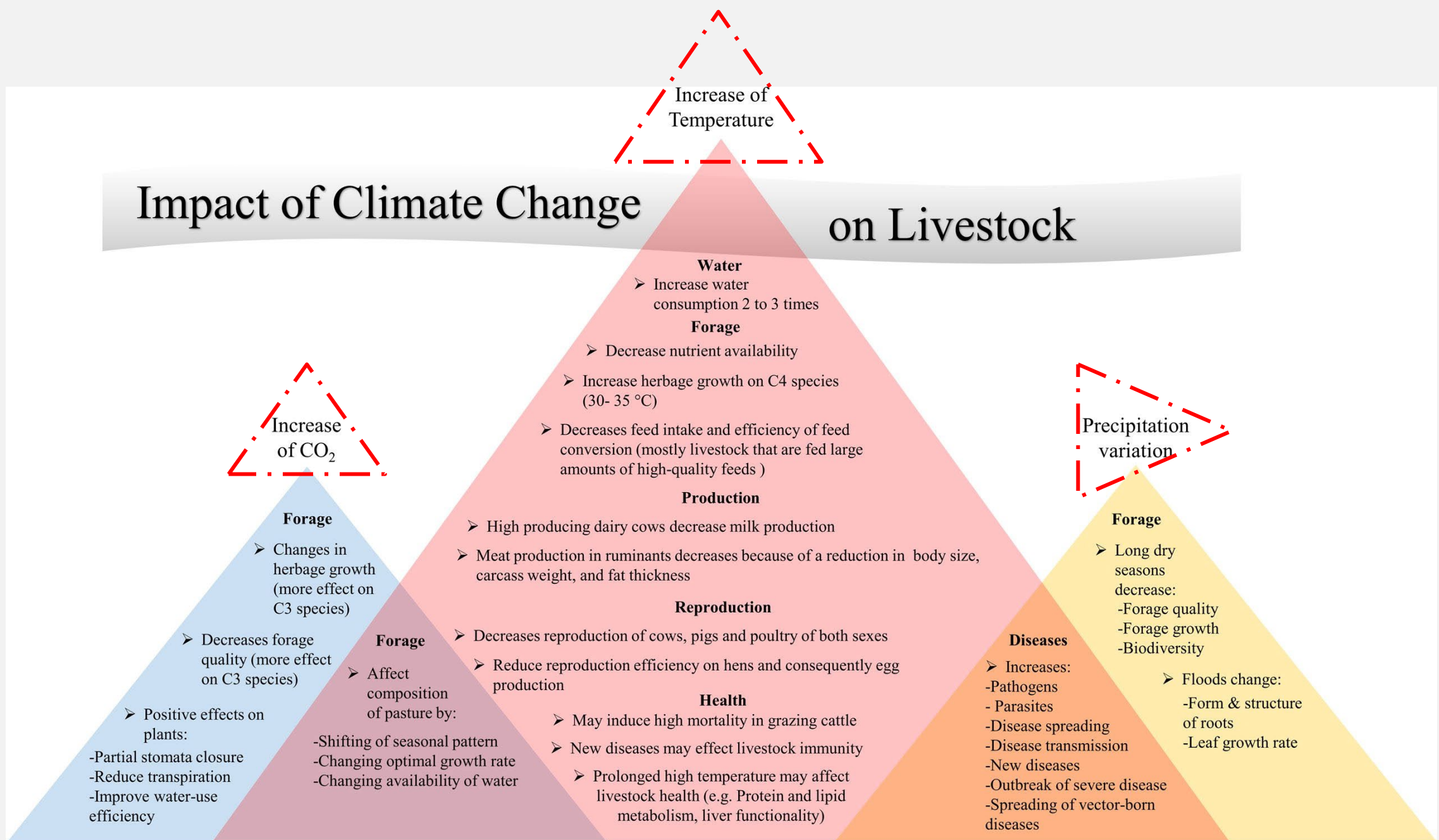
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- There is no one-model size approach to reducing emissions from livestock ecosystem.

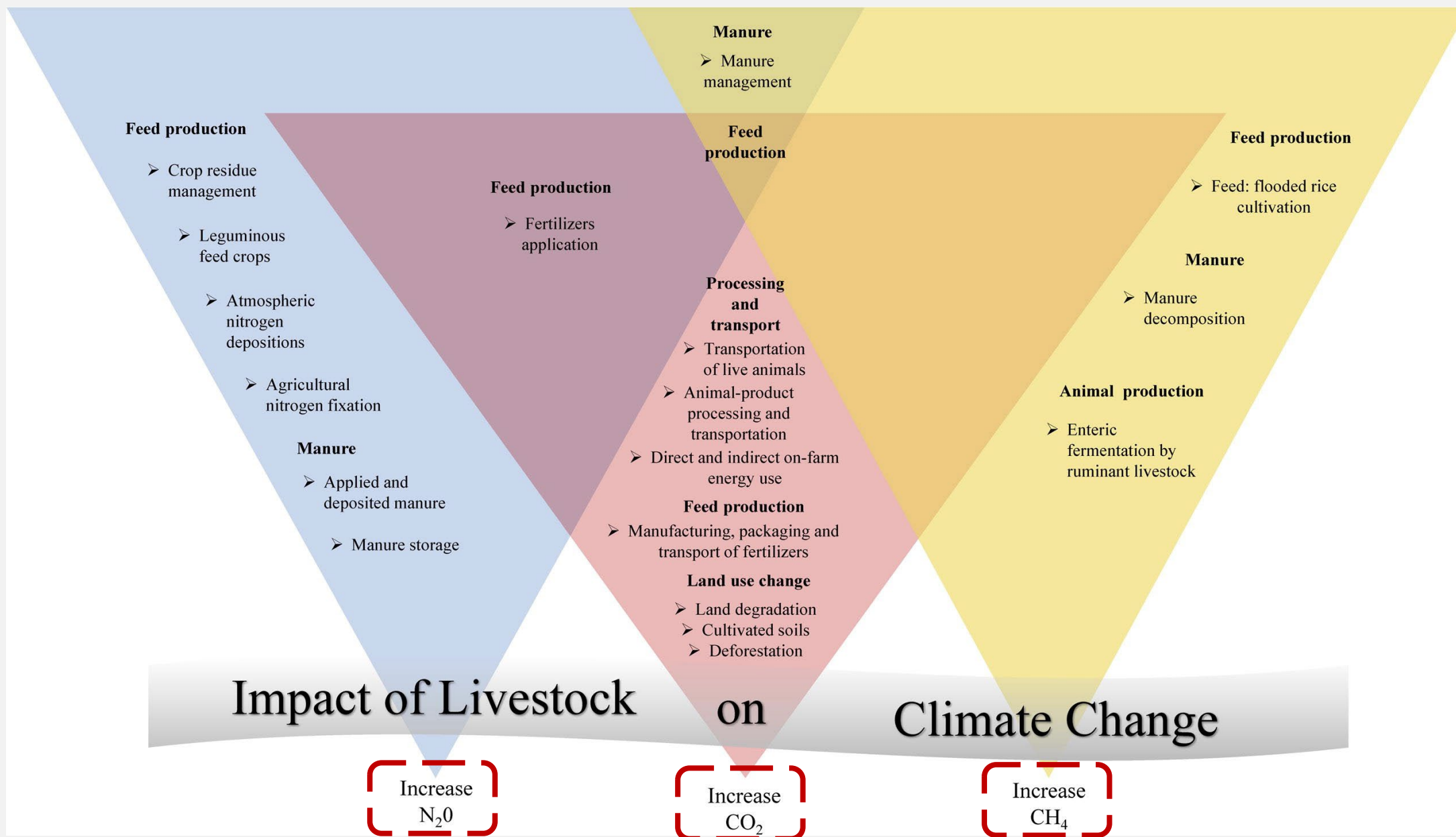
Each production system, species and location possesses unique characteristics, costs and benefits

LIVESTOCK (VS) GHG
GHG (VS) LIVESTOCK

Impact of Climate Change

on Livestock





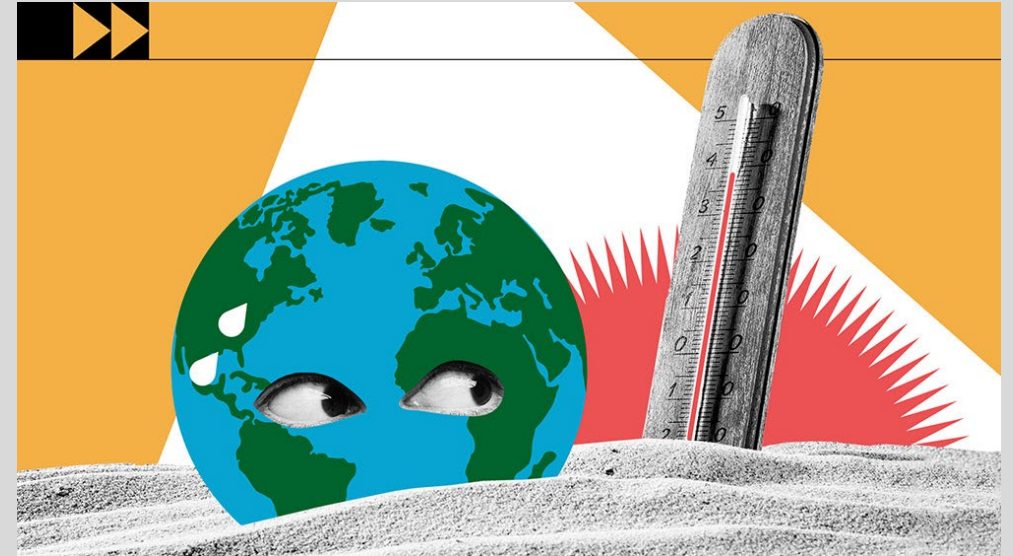
A BIBLIOMETRIC ANALYSIS ON TREND PRACTICES FOR

Clusters

- I. animal comfort,
- II. animal feeding,
- III. lowering the overall emissions
- IV. market need for adaptation

- In order to underline the trends and the shortcomings in this critical issue

**BUT WHY A
BIBLIOMETRIC ANALYSIS**



BIBLIOMETRIC ANALYSIS

IS

Summarizes large quantities of bibliometric data to present the state of the intellectual structure and emerging trends of a research topic or field.

- Quantitative (evaluation and interpretation)
 - Qualitative (interpretation only)

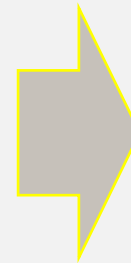
- Van Eck, N.J., & Waltman, L. (2014). Visualizing bibliometric networks. In Y. Ding, R. Rousseau, & D. Wolfram (Eds.), *Measuring scholarly impact: Methods and practice* (pp. 285–320)
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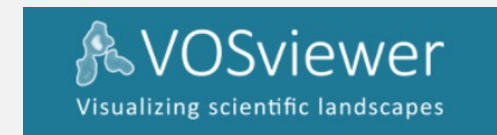
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WILL DO

In current research: Science mapping with **Co-word analysis** technique that examines the existing or future relationships among topics in a research field by focusing on the written content of the publication itself.

WITH



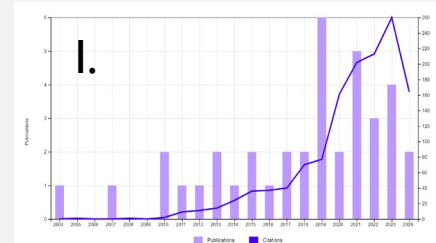
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WEB OF SCIENCE

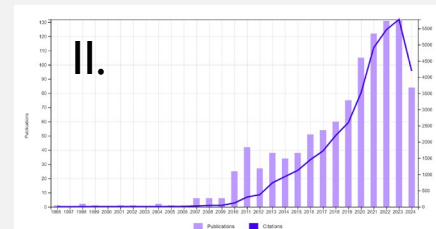
PRELIMINARY METADATA ANALYSIS UNDER TEXT MINING FUNCTIONALITY

A.

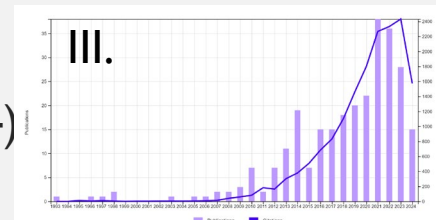
I. Livestock, climate change, **animal comfort** : 38 results (2003-2024)



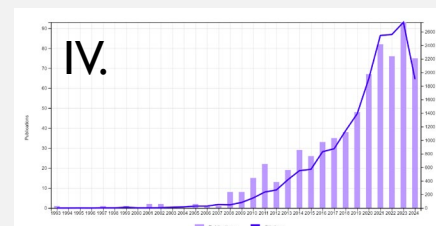
II. Livestock, climate change, **animal feeding**: 1046 results (1996-2024)



III. Livestock, climate change, **energy consumption**: 275 results (1993-2024)



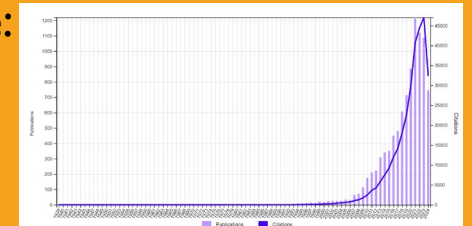
IV. Livestock, climate change, **market**: 697 results (1993-2024)



B.

THE GENERIC CASE

□ Livestock, Climate change: 9.446 results (1939-2024)



Methodology:

Database: Web of science

Keywords:

Livestock [**AND**] Climate change

Sample: 9.446 different peer reviewed papers

Co-word analysis

Limitations:

Minimum citations: 10

Limitations on Clustering

Minimum resolution (1.0)

(cluster formed under at least 20 iterations → strong interconnection)

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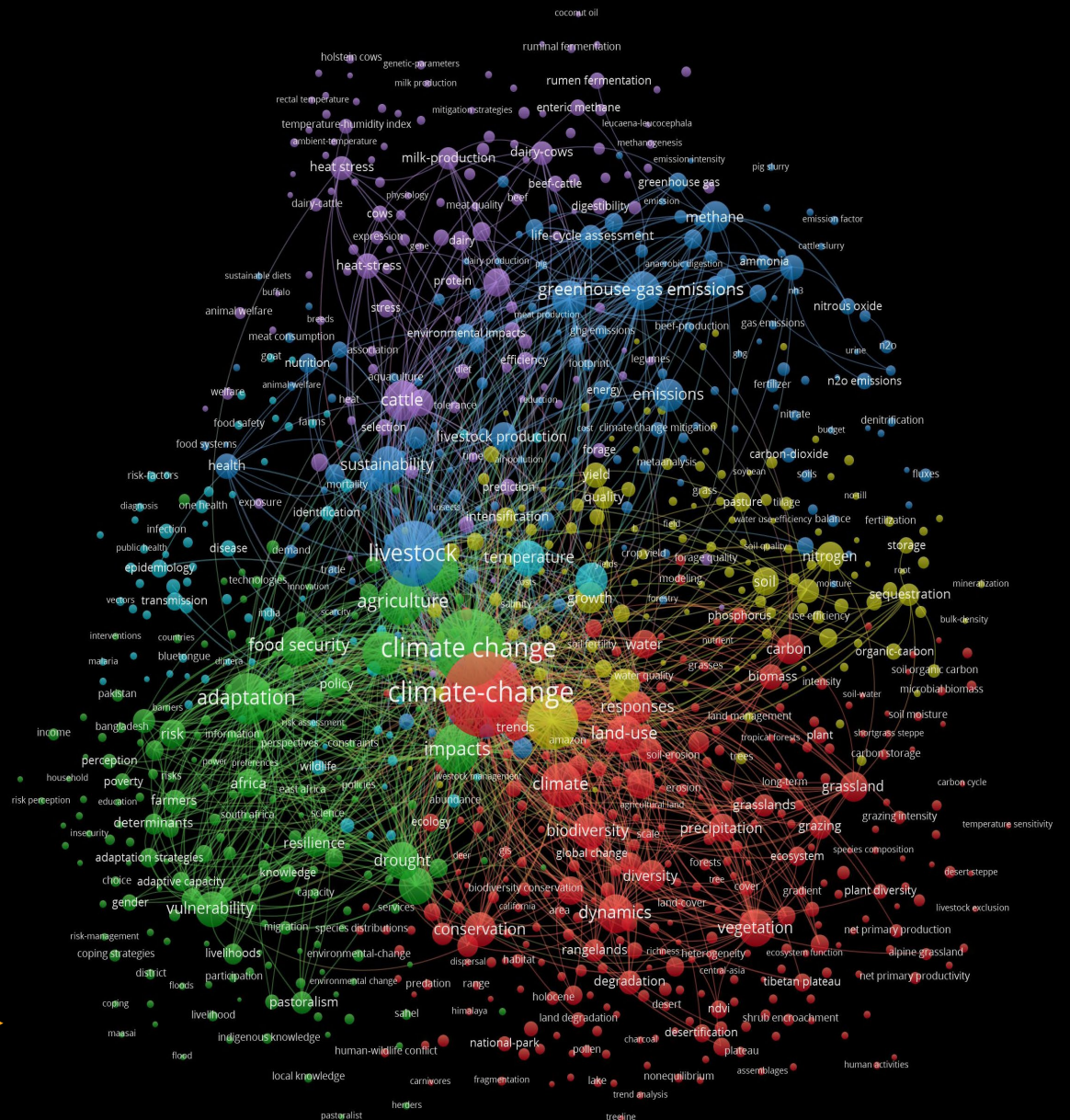
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Outcome



Purple Clusters interconnections

- Dairy-cows
- Holstein Friesian (breed)
- Rumen fermentation (process)
- Coconut oil (animal feeding)

Blue Clusters interconnections

- Livestock
- GHG
- Welfare
- Climate policy
- Mature management
- Denitrifications
- Zoonosis | Malaria | Infection

Green Clusters interconnections

- Vulnerability
- Pastoralism
- Local knowledge
- Farmers
- Income

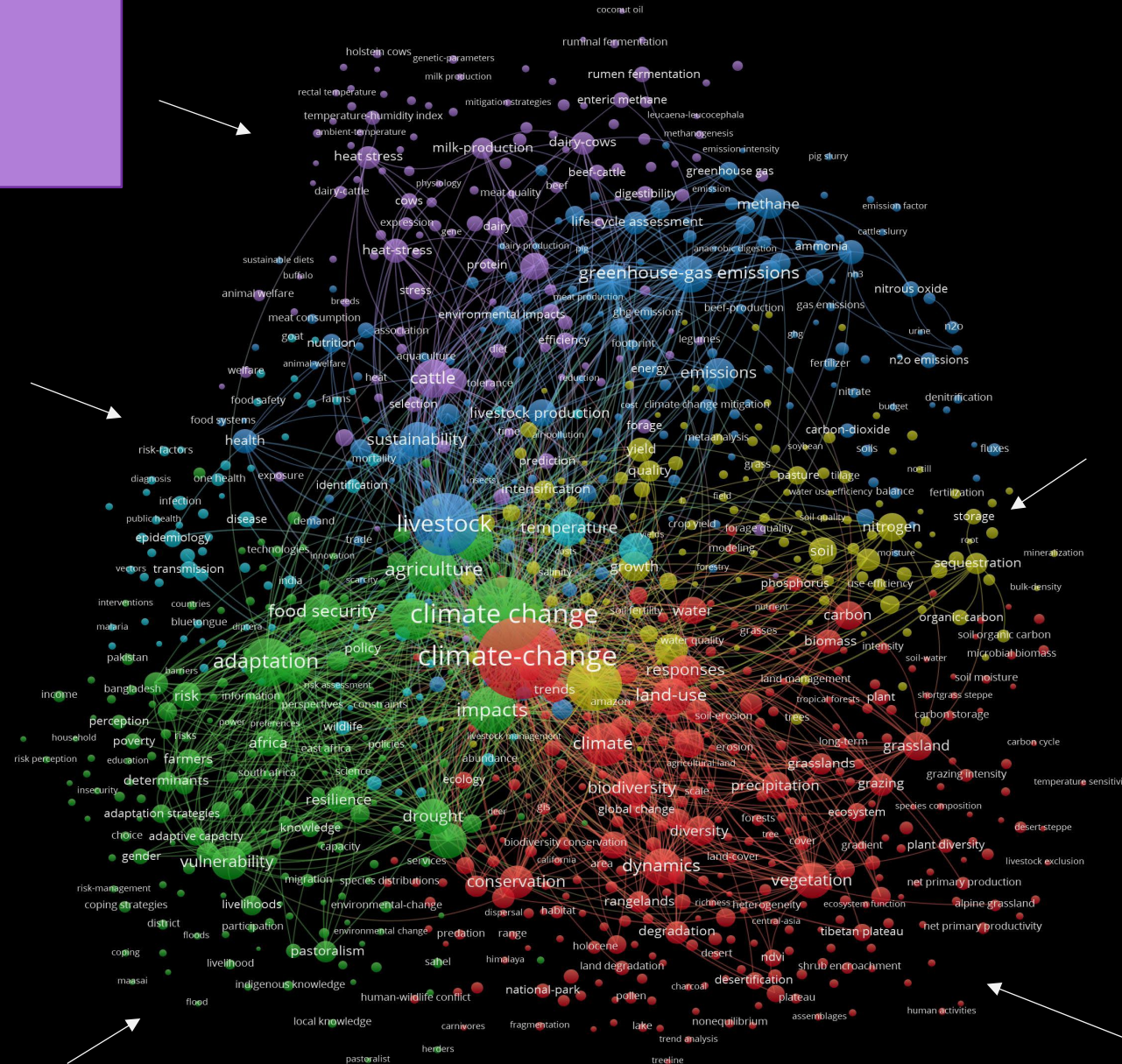
5 Clusters

Yellow Clusters interconnections

- Nitrogen
- (Soil Carbon)Sequestration

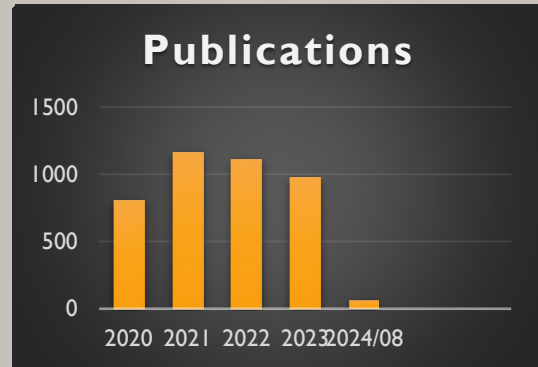
Red Clusters interconnections:

- Biodiversity
- Plant diversity
- Dynamics
- NDVI: Normalized Difference Vegetation Index
- Grazing
- Alpine grassland



Publications from 1939 to 2024/08 : 9.446

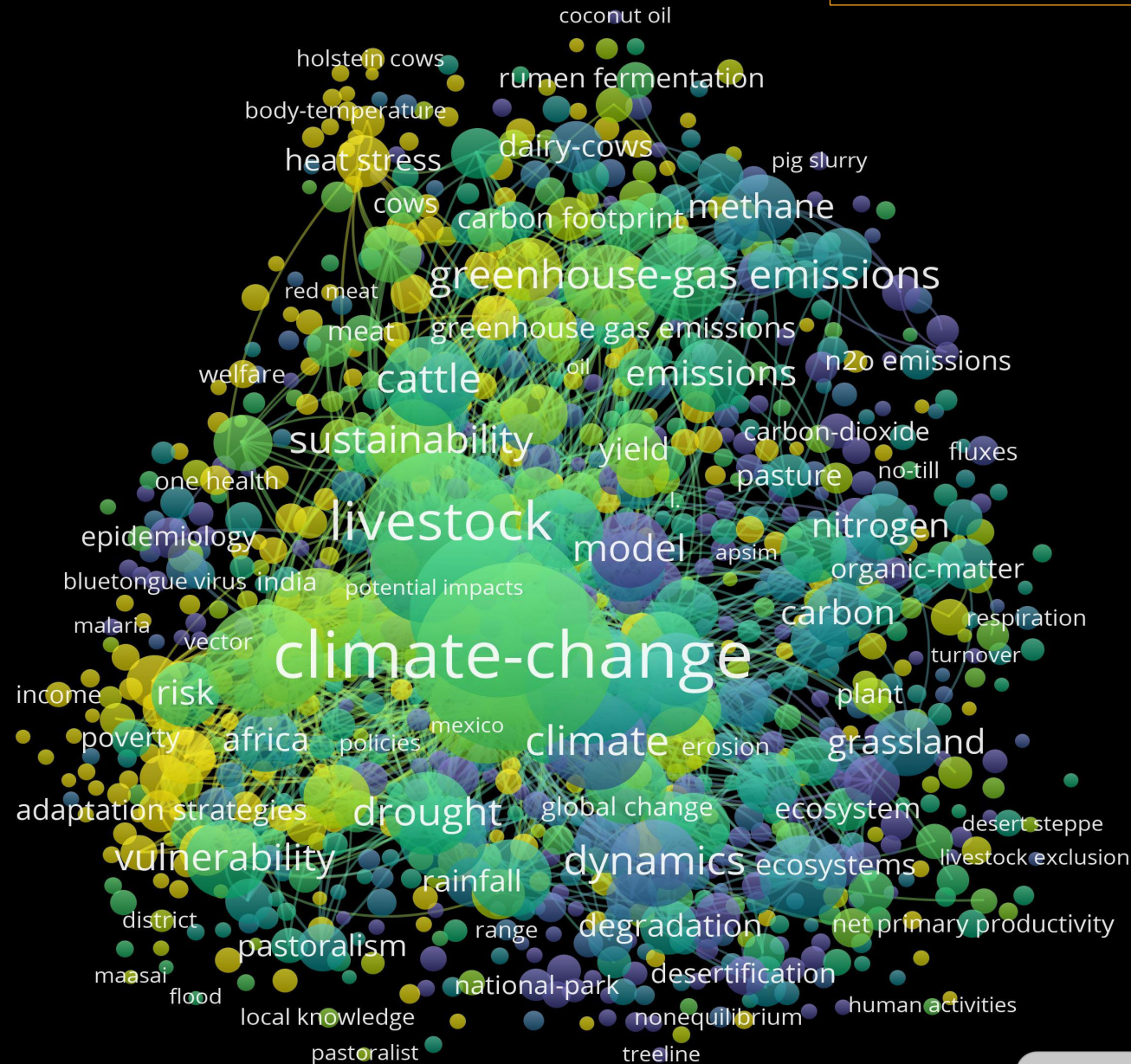
➤ At 2020 to 2024



- Starting at 2016 >400 per year

➤ At 2015 to 2009
350 < publications < 100 per year

➤ Before 2000 <20 per year



Yellow Cluster:

Publications after 2020

- ☐ Heat Stress/Body temperature
- ☐ Vulnerability & Adaptation strategies
- ☐ Poverty & Income
- ☐ Welfare
- ☐ Net primary productivity
- ☐ N₂O emissions
- ☐ Holstein cows



CONCLUSIONS

Core trends on research :	New strategies for adaptation in climate transition & Animals welfare (Heat stress)
Leading research :	Animal capital relating to cattle Mitigation of GHG emissions (N ₂ O)
Limited research on market and stakeholders :	Institutional changes (e.g. trade, conflict resolution, income stabilization programs ect)



Thank you!



www.res4live.eu

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