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animal
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force

A European Public-Private Partnership



EAAP

European Federation of Animal Science



LIVESTOCK ARE MORE THAN FOOD



© Animal Task Force / Inge Miliou Krüger

4th one-day symposium of the Animal Task Force & the EAAP Commission on Livestock Farming Systems: *Livestock are more than food*

**“Evolving standards:
ethical perspectives on
animal welfare in agroecology”**

Jacopo Goracci

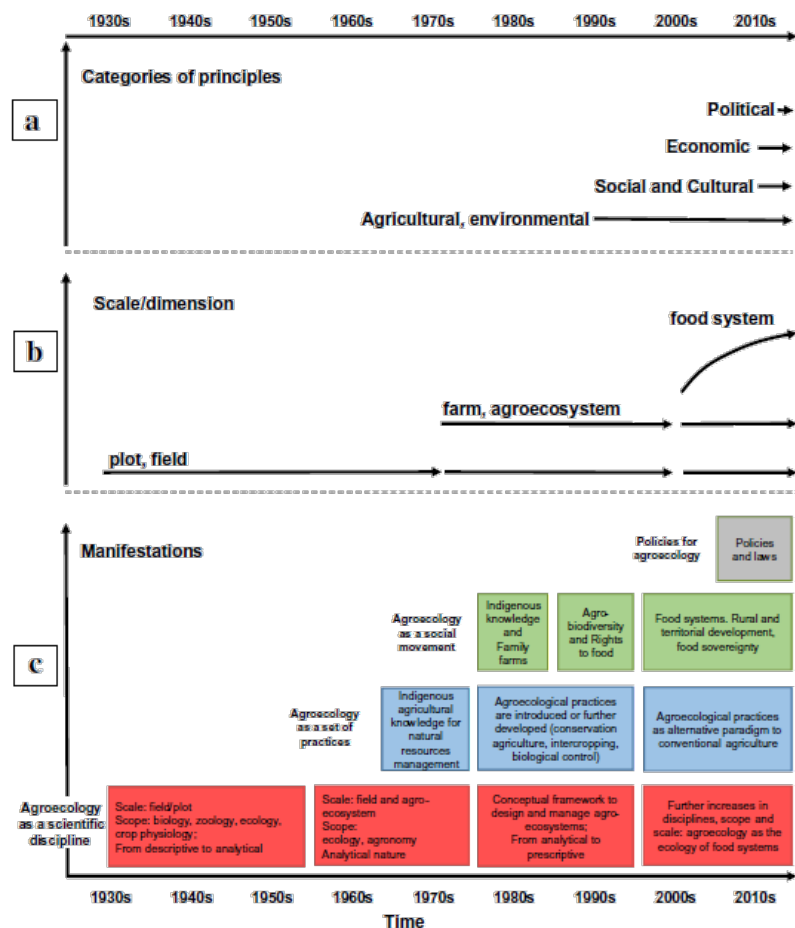


Tenuta di Paganico Farm, Paganico (GR), Italy

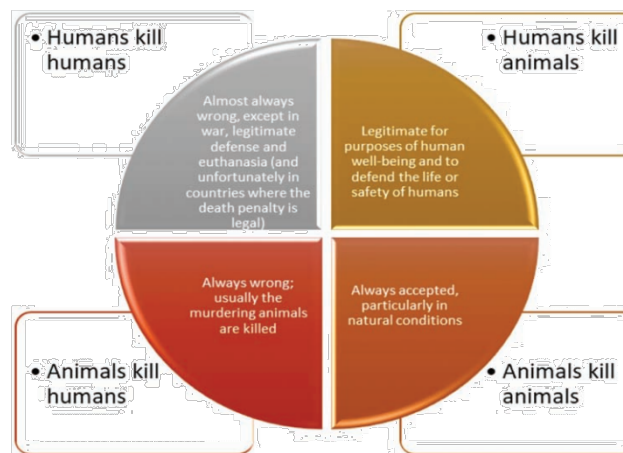
Italian Agroforestry Association, Masi (PD), Italy



TENUTA DI PAGANICO



the complexity of the moral position about killing



Food and Agriculture
Organization of the
United Nations

2018

THE 10 ELEMENTS OF AGROECOLOGY GUIDING THE TRANSITION TO SUSTAINABLE FOOD AND AGRICULTURAL SYSTEMS

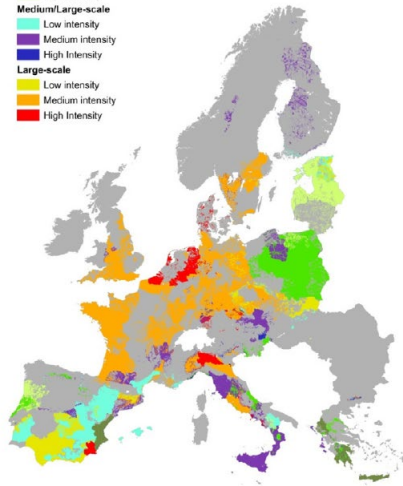


*more-than-just-sustainable and incipient initiative
make explicit its impacts to AW & show evidence of the potential
positive AW, human welfare & environment outcomes*

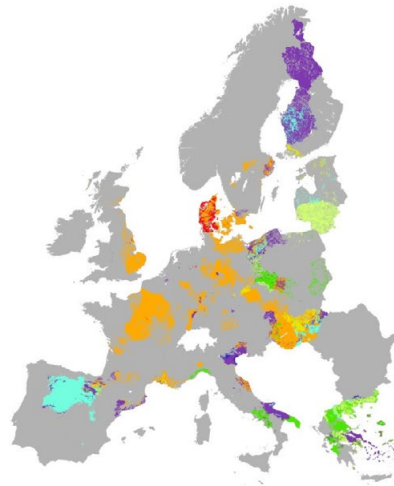
- Gliessman S.R. 2007. Agroecology: the ecology of sustainable food systems. CRC Press, Taylor & Francis, New York, USA. 384 p
- HLPE 2019 Agroecological and other innovative approaches for sustainable agriculture and food systems that enhance food security and nutrition. A report by the High Level Panel of Experts on Food Security and Nutrition of the Committee on World Food Security, Rome.
- Wezel, A. et al. 2020. Agroecological principles and elements and their implications for transitioning to sustainable food systems. A review. Agron. Sustain. Dev. 40, 40. <https://doi.org/10.1007/s13593-020-00646-z>
- Pulina G. 2020. Ethical meat: respect for farm animals, Animal Frontiers, 10 (1): 34- 38. <https://doi.org/10.1093/af/vfz052>

Small-Scale
Low intensity
Medium intensity
High intensity
Medium/Large-scale
Low intensity
Medium intensity
High intensity
Large-scale
Low intensity
Medium intensity
High intensity

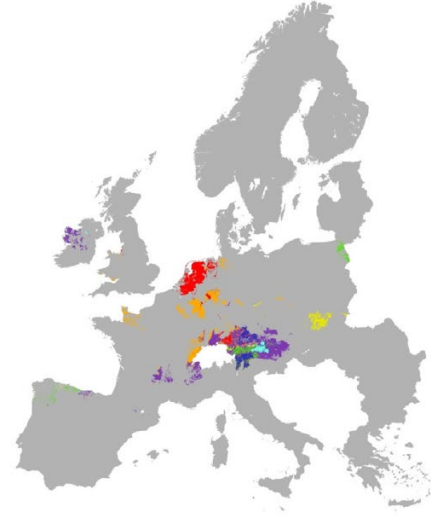
a. Mixed farming



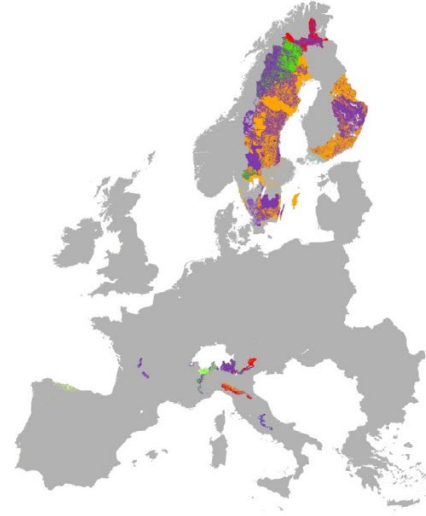
b. Arable farming



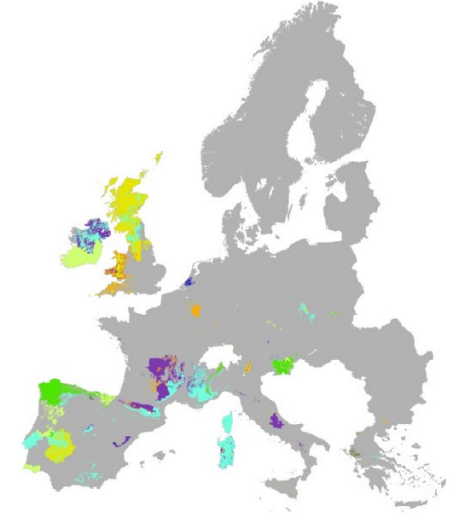
c. Cattle farming, Permanent grass



d. Cattle farming, Temporary grass



e. Sheep & Goat farming



DIFFERENT APPROACHES TO FOOD AND FARMING

CONVENTIONAL

Conventional, intensive and industrial agriculture, generally relies on external chemical inputs and genetically modified organisms (GMOs), causing environmental damage

REGENERATIVE (7)

Some regenerative approaches claim to put soil health at the center but do not explicitly define which practices are required to achieve these outcomes or what methodologies are used to determine outcomes, and largely rely on conventional inputs

REGENERATIVE

Use on conventional forms of regenerative practices that prioritize soil conservation as a means of restoring and improving various ecosystem services and that do not hinder a transition to organic farming

ORGANIC

Organic farming contributes to climate change mitigation and adaptation, and to biodiversity protection, with legally defined minimum practices prohibiting synthetic pesticides & fertilizers as well as GMOs. It is a system approach considering soil, plant and ecosystem health as one

COMMON TOOLS



Pesticides & herbicides



Synthetic fertiliser



GMOs

INDUSTRIAL APPROACH



CHEMICAL NO-TILL EROSION CONTROL

COMMON TOOLS



Compost



Biological pest control



Biodiversity protection & enhancement



No GMOs

HOLISTIC APPROACH



SOIL CONSERVATION



Animal welfare



Third party certification



FAIR PLAY FAIR PAY



Carbon capture

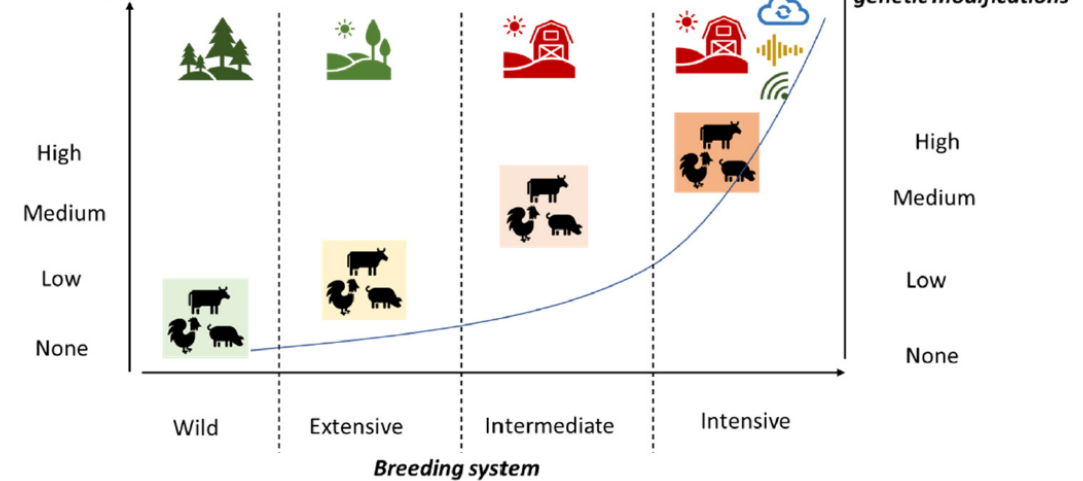
can the “one size fits all” approach work?

LANDSCAPE AGRONOMY

the influence of landscape on farming practices & the role of the farmer as actor shaping the landscape

“the agricultural landscapes are not stable as the structural development of agriculture in Europe is an on-going process”

- Benoît M, et al. 2012. Landscape agronomy: a new perspective for research on agricultural landscapes. Landscape Ecol. 10: 1385-1394, <http://dx.doi.org/10.1007/s10980-012-9802-8>
- Andersen, E. 2017. The farming system component of European agricultural landscapes. European Journal of Agronomy, 82: 282–291. <https://doi.org/10.1016/j.eja.2016.09.011>

Human responsibility
for animal welfare

Sentience Institute estimated 74% of farmed land animals (vertebrates only) and all farmed fish are factory farmed

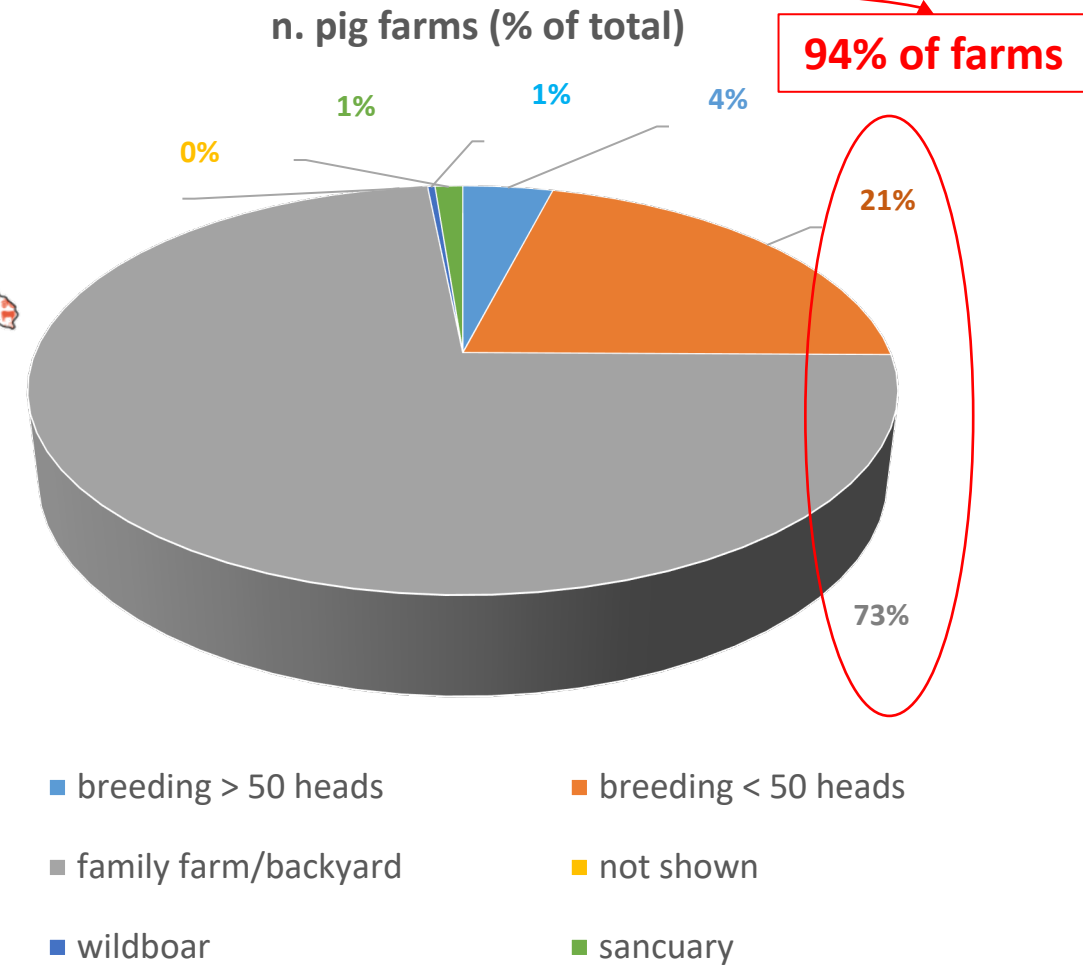
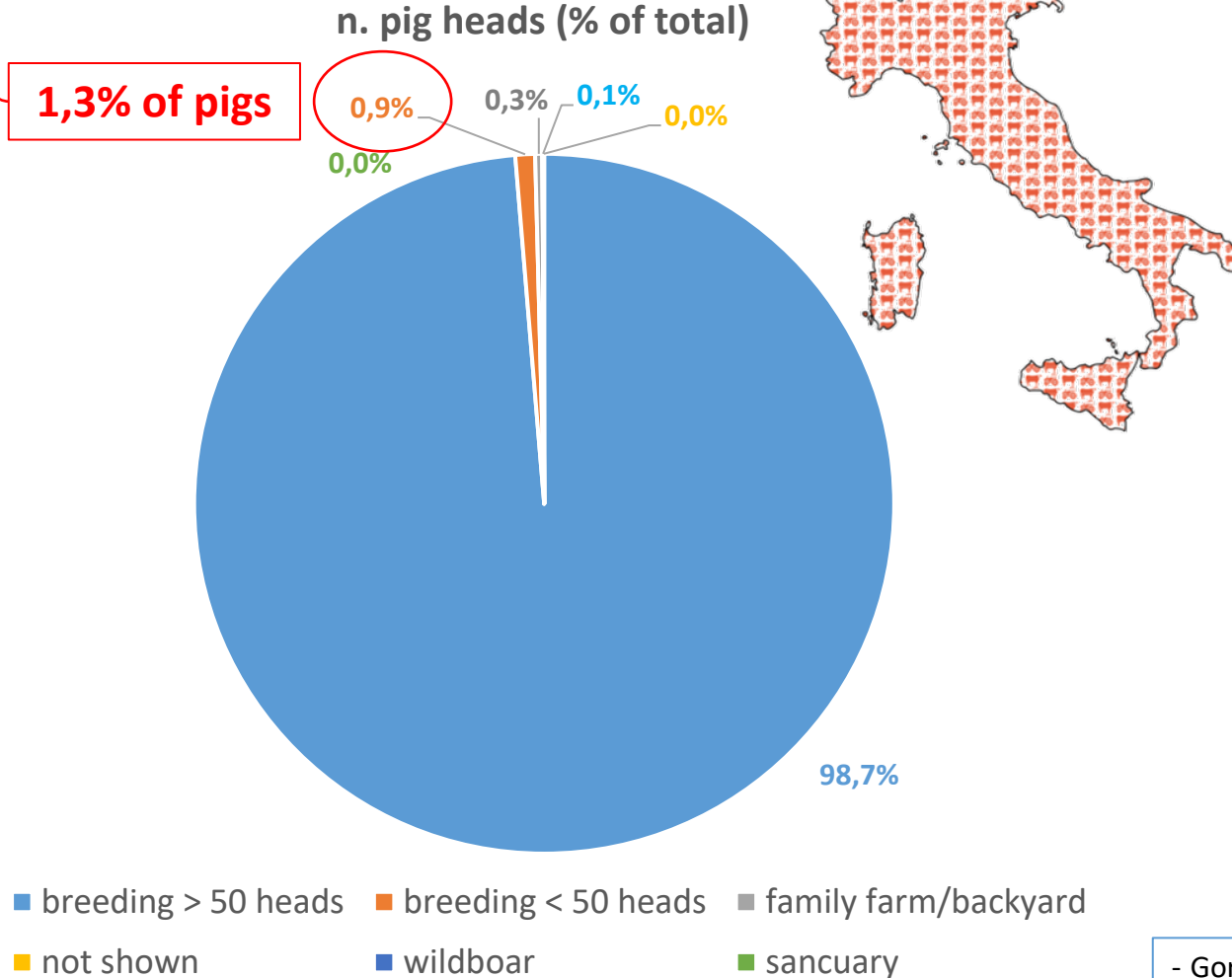
- Ritchie H. 2023. How many animals are factory-farmed? OurWorldInData.org. Retrieved from: 'https://ourworldindata.org/how-many-animals-are-factory-farmed' [Online Resource]
- Anthis K, Anthis JR. 2019. Global Farmed & Factory Farmed Animals Estimates. Sentience Institute.
- Cesarani A, Pulina G. 2021. Farm Animals Are Long Away from Natural Behavior: Open Questions and Operative Consequences on Animal Welfare. Animals, 11, 724. <https://doi.org/10.3390/ani11030724>
- Provenza F. 2021 After Ten Thousand Years of Domestication, Can Livestock Still Self-Medicate? Planta Med; 87(15): 1237 DOI: 10.1055/s-0041-1736740

FARMED ANIMALS

"animals as partial human artifacts"



"livestock self-medicate, even after 10.000 years of domestication"



- Goracci J, Zuliani A. 2023. Sistemi agrosilvopastorali e benessere animale in azienda: quando gli strumenti di valutazione non fanno la differenza. I Forum Nazionale di Agroforestazione. Coltivare e allevare con gli alberi. Roma, 6 -7 dicembre 2023

RESOURCE-BASED INDICATORS
MANAGEMENT-BASED INDICATORS
«GLOBAL» THRESHOLDS



standardization of breeding systems?
allow the maintenance of the status quo?

increase the level of animal welfare on-farm?

PURPOSE OF THE AW ASSESSMENT METHOD

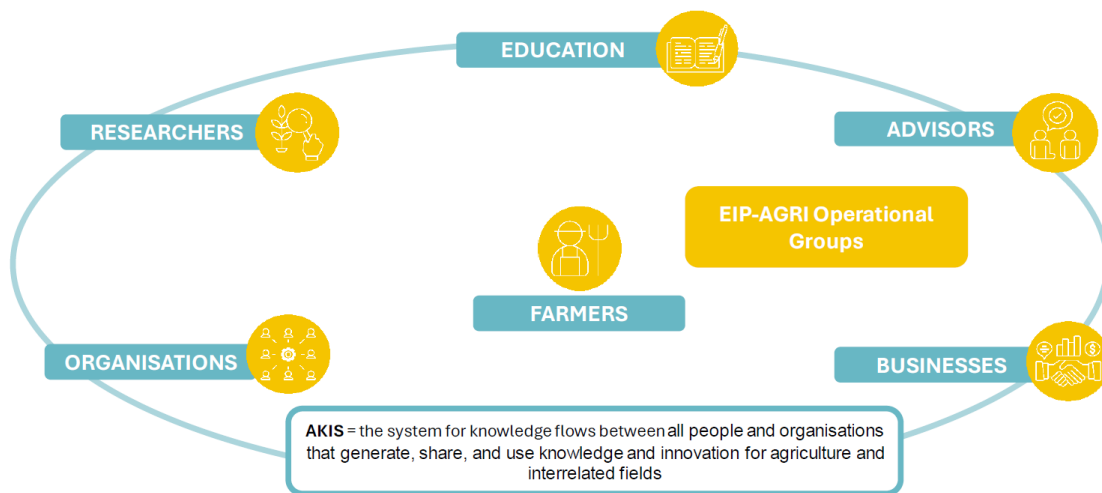
effective for large herds?

- ← sensors and artificial intelligence (podometer, collar, body scan)
- ← “block-chain” for supply chain traceability

adaptable to family & small-scale herds?

- ← validity of the result/score (transhumant, pasture-based)
- ← ABMs
- ← “context-based” thresholds

Agricultural Knowledge and Innovation Systems (AKIS)



«farmers first» = keyplayers

valuing farmers' opinion for a collaborative breeding

PARTICIPATORY BREEDING

- Was born with an application to the improvement of plant germplasm where it's tested on both privately-owned farms and public research stations;
- one trait of relevance is the opinion that each farmer has (and shares) about each variety or genetic family;
- since the farmers have deep knowledge about the adaptability of the animals to the agroecosystem, they will also be able to pick the desirable traits for such adaptation;
- in cattle, the subjective opinion that a farmer has of an animal is a heritable trait and can therefore be selected for;
- this allows to develop germplasm adapted to marginal areas, like the Mediterranean regions.

VALIDATION

Morphological measures taken by trained technicians can be added for comparison to an objective reference and for better understanding farmers perceptions.

It'd be good practice to conduct genomic testing for the animals involved to improve the genetic connectedness among the herds.

We expect this approach to yield significant results and pave the way for innovative breeding in marginal areas, such as Maremmana cattle breed.

FARMERS' PERSPECTIVE

Farmer's opinion can:

- capture traits of the animal that could not easily be taken by the instruments (quantitative and qualitative traits);
- provide zero-cost data collection and,
- bring back the farmer into the actual process of shaping the breed.

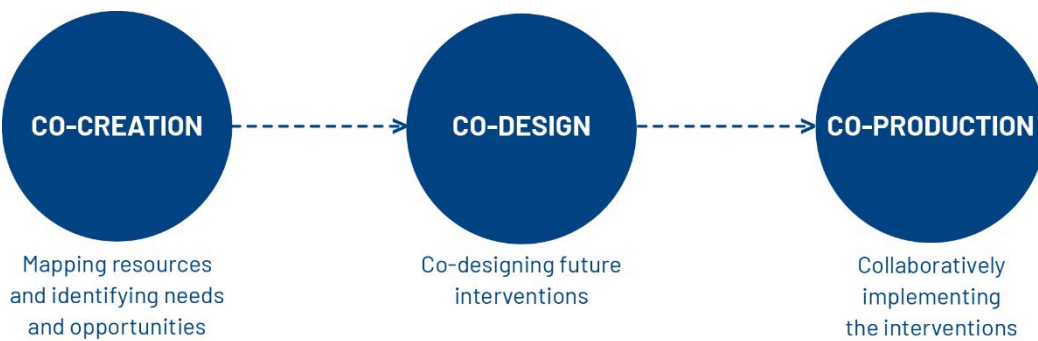
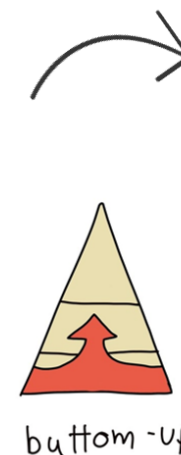
what is your overall opinion of this heifer as a member of your herd?

how likely are you to sell this heifer?

THE APPROACH

Practically, participating farmers are asked to score their potential replacement animals, on a grading scale.

Each farmer is also asked to score cows in other herds, so to create a 'network' where opinions can be compared.



food & agriculture policy
co-creation & co-production
for up-scaling agroecology
→ 8th principle of AE
“co-creation of knowledge”

- Almeida H. 2024. Setting the scene: EIP-AGRI and its Operational Group projects. EU CAP Network Conference “EIP AGRI Operational Groups: innovation in practice”. Estoril, Portugal, 6-8 May 2024.
- Singh RK et al. 2021. Measuring successful processes of knowledge co-production for managing climate change and associated environmental stressors: Adaptation policies and practices to support Indian farmers. Journal of Environmental Management, 282, 111679 . <https://doi.org/10.1016/j.jenvman.2020.111679>
- Tiezzi F et al. 2024. A participatory approach to livestock selection for marginal areas: a framework for valuing farmers' opinion. AGROECOLOGY EUROPE FORUM 2023 - 16/18 November - Gyöngyös, Hungary

“there is convincing evidence that traditional knowledge and farmers' creativity can provide rich insights to bottom-up approaches for managing the environmental risks in agriculture”

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Direct support of farms - 7/9



€80 billion (from 2014 to 2020)

approximately €3.8 billion

research & innovation: food security, sustainable agriculture, bioeconomy

→ farms, universities, research institutions, agribusinesses, stakeholders,

farms: partners in larger consortia rather than direct recipients

→ it's reasonable to assume that farms might receive a minority share of the funding, with the majority going to research and development activities.



Estimating Farm Share:

farms might receive between 10% and 20% of the total €3.8 billion

allocated as direct funding: from €380 to €760 million

approximately **0,475% to 0,95% of the total Horizon 2020 budget**

Reliability Estimate: moderate to low (40-60% reliability)

€6.999.256,01
891,80 PM



€40.691,25k
10,5 PM



0,58% of total budget
1,18% of total PMs



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Call: **HORIZON-CL6-2024-GOVERNANCE-01**

(Innovative governance, environmental observations and digital solutions in support of the Green Deal)

Topic: **HORIZON-CL6-2024-GOVERNANCE-01-11**

Type of Action: **HORIZON-CSA**

(HORIZON Coordination and Support Actions)

Proposal number: **101182942**

Proposal acronym: **FarmBioNet**

Type of Model Grant Agreement: **HORIZON Lump Sum Grant**



€2.713.753,72



TENUTA DI PAGANICO

€44.844,38



1,65% of total budget

are farmers real keyplayers?



€95,5 billion (from 2021 to 2027)

approximately €9 billion for Cluster 6 (+136,84%)

Food, Bioeconomy, Natural Resources, Agriculture, and Environment



Estimating Farm Share:

farms might receive between 10% to 30% of the Cluster 6 budget:
from €900 million to €2,7 billion

approximately **0,94% to 2,83% of the total Horizon Europe budget**

Reliability Estimate: moderate (60-70% reliability)



+237 to 355%



traditional
agriculture

sustainable extensification
of agriculture

sustainable intensification
of agriculture

maintaining or increasing food production per ha without compromising the environment and depleting natural resources, but generally increasing external inputs

Tittonell P. (2014) "sustainable intensification is currently in use to justify any form of intensification, by both public and private parties"

ecological intensification
in agriculture

the means to make intensive and smart use of the natural functionalities of the ecosystem to produce food, fibre, energy and ecological services in a sustainable way

decreasing the depletion of natural resources & environmental impacts, limiting the decrease of food production per ha: reduce external inputs, and livestock densities, minimizing food loss, lowering GHG emissions, maintaining sufficient output for human consumption
FARMING WITH NATURE & RETERRITORIALIZATION OF FOOD PRODUCTION
SOCIAL JUSTICE & FOOD SOVEREIGNTY

van Grinsven et al. (2015) "in Europe extensification of agriculture is sustainable when combined with adjusted diets and externalization of environmental costs to food prices"

- Hoshide et al. 2023. Editorial: Ecological intensification and sustainable intensification: increasing benefits to and reducing impacts on the environment to improve future agricultural and food systems. Front. Environ. Sci. 11, 1301995. <https://doi.org/10.3389/fenvs.2023.1301995>
- Tittonell P. 2014. Ecological intensification of agriculture-sustainable by nature. Current Opinion in Environmental Sustainability, 8: 53-61. <https://doi.org/10.1016/j.cosust.2014.08.006>
- Bluwstein J et al. 2015. Sustainable extensification as an alternative model for reducing GHG emissions from agriculture. The case of an extensively managed organic farm in Denmark, Agroecol. and Sust. Food Sys., 39(5): 551-579. <https://doi.org/10.1080/21683565.2015.1013240>
- van Grinsven HJM et al. 2015. Potential of extensification of European agriculture for a more sustainable food system, focusing on nitrogen. Env. Res. Letters, 2 (10): 1748-9326. <https://dx.doi.org/10.1088/1748-9326/10/2/025002>

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4th one-day symposium of the Animal Task Force & the EAAP Commission on Livestock Farming Systems: *Livestock are more than food*

THANK YOU FOR YOUR ATTENTION

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