SOLUTIONS FOR SUSTAINABLE BEEF FARMING: EVIDENCE FROM RESEARCH AND PRACTICE ACROSS EUROPE

BovINE: Beef Innovation Network Europe

Final Dissemination Conference

Thursday 1st December 2022 (online)

09.30-12.30 CET

This project has received funding from the European Union's Horizon 2020 rural renaissance programme | Project No: 862590 under call H2020-RUR-2019-15

Simultaneous translation

HOUSEKEEPING

Technical support

Use Q&A tab

Time: CET, i.e. Brussels time

In English only

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Solutions for sustainable beef farming: evidence from research and practice across Europe

Welcome and Overview

Maeve Henchion - *BovINE project co-ordinator*

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BovINE
BEEF INNOVATION NETWORK EUROPE

What is BovINE?

Why was it set up?

What are we going to hear today?

How did it work?

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What?

Figure 1.3: Map of Europe with locations of national/regional networks

Kick-off meeting January 2020

- Ireland
- Belgium
- Germany
- France
- Estonia
- Spain
- Portugal
- Poland
- Italy

18 partners

9 countries

€2 million

3 years

385,000 beef farmers

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Why?

Beef farming must become more sustainable!

No problem, but what does this mean for us?

What do you need? We will look for solutions

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How?

We've looked at that problem in our research, here's what we found....

Here's what we've done to address that....

We need.....

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Framework to collect needs

4 BovINE thematic areas

Needs register/priority topics

[Priority Topics - BovINE (bovine-eu.net)]

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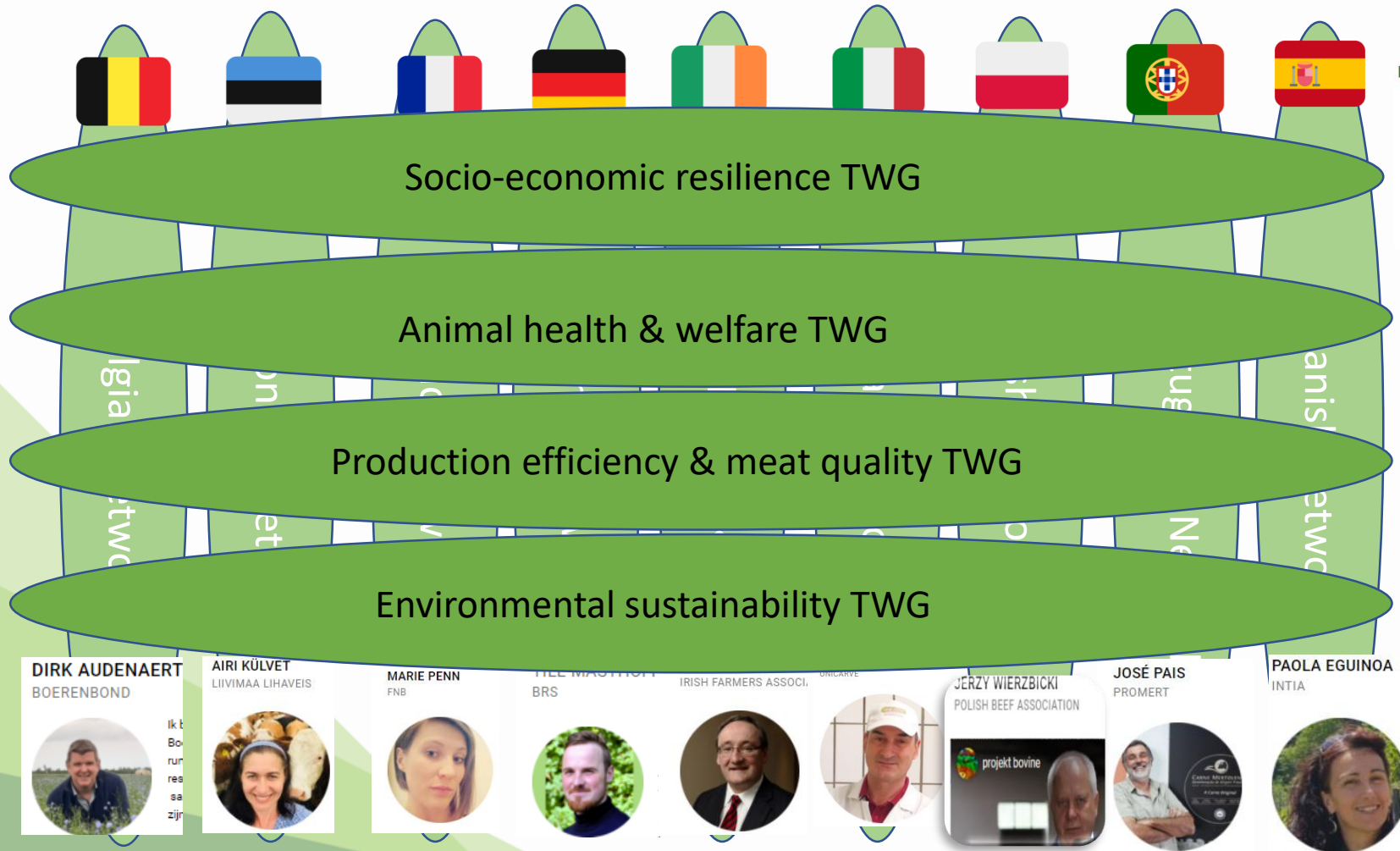
BovINE networks



Leader of Socioeconomic Resilience Theme

CENTRO RICERCHE PRODUZIONI ANIMALI (CRPA)
KEES DE ROEST

Leader of Animal Health & Welfare Theme

FRIEDRICH-LOEFFLER-INSTITUT (FLI)
DR. FRANK ZERBE

Leader of Production Efficiency & Meat Quali

UNIVERSIDAD DE ZARAGOZA
VIRGINIA C. RESCONI

Leader of Environmental Sustainability

ILVO
KAREN GOOSSENS & RIET DESMET

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“Results”

- Solutions to 32 farmers’ needs
  (4 themes x 2 needs x 3 years)
- 340 practice abstracts
- 12 webinars
- 8 animations
- multiple videos (available on BovINE Youtube channel)
- multiple national and European meetings, seminars, presentations, press releases, social media, BovINE Knowledge Hub, etc.

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Agenda

09.40-10.00	**Sustainability challenges on European beef farms** *Maite Aguilar, INTIA & Richard Lynch, Teagasc*
10.00-10.30	**Confronting socio-economic resilience challenges facing European beef farmers** *Kees de Roest, CRPA*
10.30-11.00	**Solutions to improve animal health and welfare of beef cattle** *Alexander Riek, FLI*
11.00-11.15	BREAK
11.15-11.45	**Addressing beef production efficiency and meat quality** *Virginia Resconi, UNIZAR*
11.45-12.15	**Tackling environmental sustainability on beef farms** *Riet Desmet & Karen Goosens, EL-ILVO*
12.15-12.30	**BovINE resources to support beef farming sustainability** *Rhonda Smith, Minerva UK*
12.30	**Meeting close**

Sustainability Challenges on European Beef Farms

Maite Aguilar (INTIA) & Richard Lynch (TEAGASC)

BovINE Final Dissemination Conference, 1st Dec 2022, Brussels

www.bovine-eu.net

List of Contents

Methodology implemented to identify farmers' needs.

(*M. Aguilar, INTIA-Spain*)

Methodology in practice.

(*R. Lynch, TEAGASC-Ireland*)

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Introduction

BovINE
BEEF INNOVATION NETWORK EUROPE

FARM SUSTAINABILITY

Innovative &
Practical solutions
At farm scale

Holistic view of
farming systems &
socio-economic
environment

MULTI-ACTOR APPROACH

What are your needs?

GRASS ROOT NEEDS

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Collecting Grass Root Needs

FARMERS' NEEDS

- Socioeconomic Resilience
- Animal Health & Welfare
- Environmental Sustainability
- Production Efficiency & Meat Quality

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Regional/National Networks

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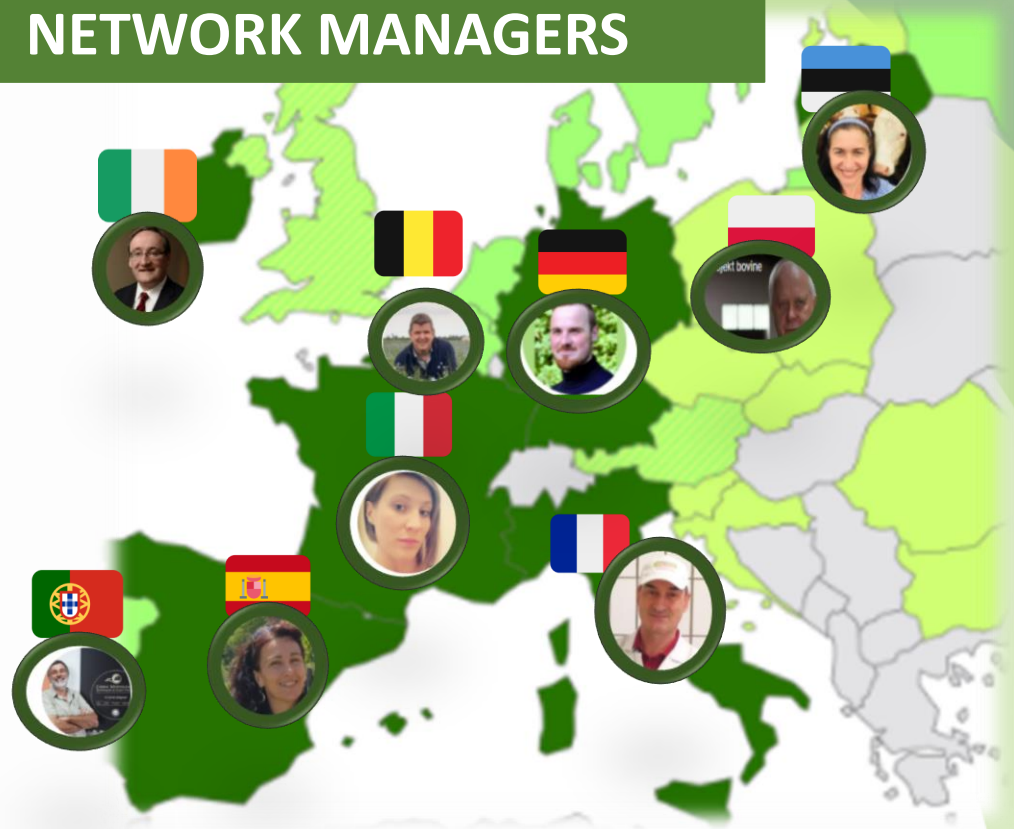
What is a Regional Network?

Group of relevant farming practitioners, innovation and business actors concerned with beef production managed by a Network Manager.

Researchers
Public Authorities
Farmers
Industry
Advisors
Vets
Education
Retailers

NETWORK MANAGERS



9 REGIONAL/NATIONAL NETWORKS

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Regional/National Networks

Grass Root Needs Collection by Network Managers

National multiactor events BovINE

REGIONAL/NATIONAL MEETINGS

- Day to Day activities
  - Publications
  - Events
  - Discussion groups
  - Meetings with farmers

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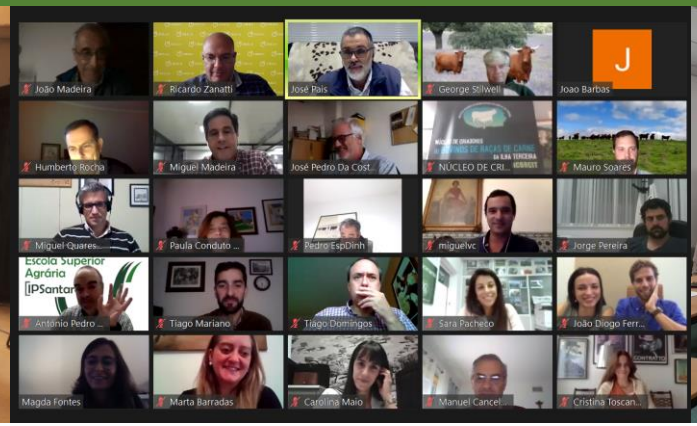
Regional/National Meetings

ONCE A YEAR PER NATIONAL/REGIONAL NETWORK



Farmers & Farmers' Groups

Rural Professionals

Relevant Experts & Guest Speakers

Researchers

Students

Producers' Associations

Public Administration

Extension Agents

27 EVENTS | **9 COUNTRIES** | **1601 STAKEHOLDERS** | **60% FARMERS**

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BovINE Grass Root Needs

Pre- health checks on animals prior to purchase

Simple tools to measure animal health and welfare

Methods to ensure a fairer distribution of price and price transparency

Initiatives to improve beef image

Tools to measure environmental sustainability

Ideas for alternative feedstuffs

Payment methods for meat quality

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Grass Root Needs prioritisation into Priority Topics

+18 GRNs per Thematic Area

2 GRNs per Thematic Area

2 PRIORITY TOPICS per Thematic Area

WHO?

Network Managers (NMs)

TWG Leaders

Thematic Working Groups (TWGs)

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GRNs prioritization into PTs

Prioritization Method	Socioeconomic Resilience	Animal Health & Welfare	Production Efficiency & Meat Quality	Environmental Sustainability
National Events	**+18 GRNs**	**+18 GRNs**	**+18 GRNs**	**+18 GRNs**
Thematic Working Group Leaders Revision				
TWGs & NMs – **Survey**	**8 GRNs**	**8 GRNs**	**8 GRNs**	**8 GRNs**
TWGs & NMs – **General Assembly**	**2 GRNs**	**2 GRNs**	**2 GRNs**	**2 GRNs**
Thematic Working Groups Description				
PRIORITY TOPICS	**2**	**2**	**2**	**2**

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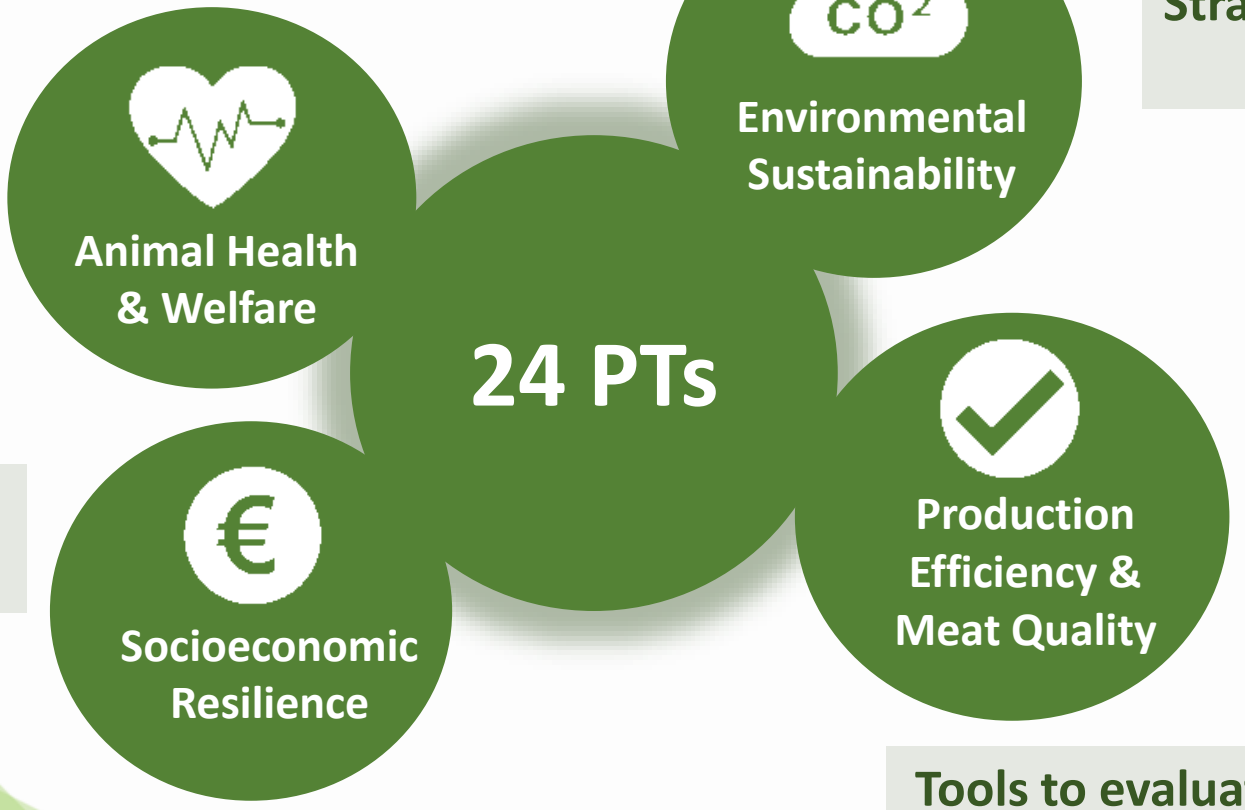
BovINE Priority Topics



Lameness of finisher bulls

Carbon sequestration

Training in animal welfare for operators/farmers

Strategies to Reduce the Enteric Emission

Initiatives to improve the image and to promote consumption

Animal feeding and stress on meat quality

Economic planning tools

Tools to evaluate the carcass and meat quality

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PRIORITY TOPICS

RESEARCH INNOVATIONS
(not yet tested on beef farms)

SOLUTIONS

GOOD PRACTICES
(already implemented on beef farms)

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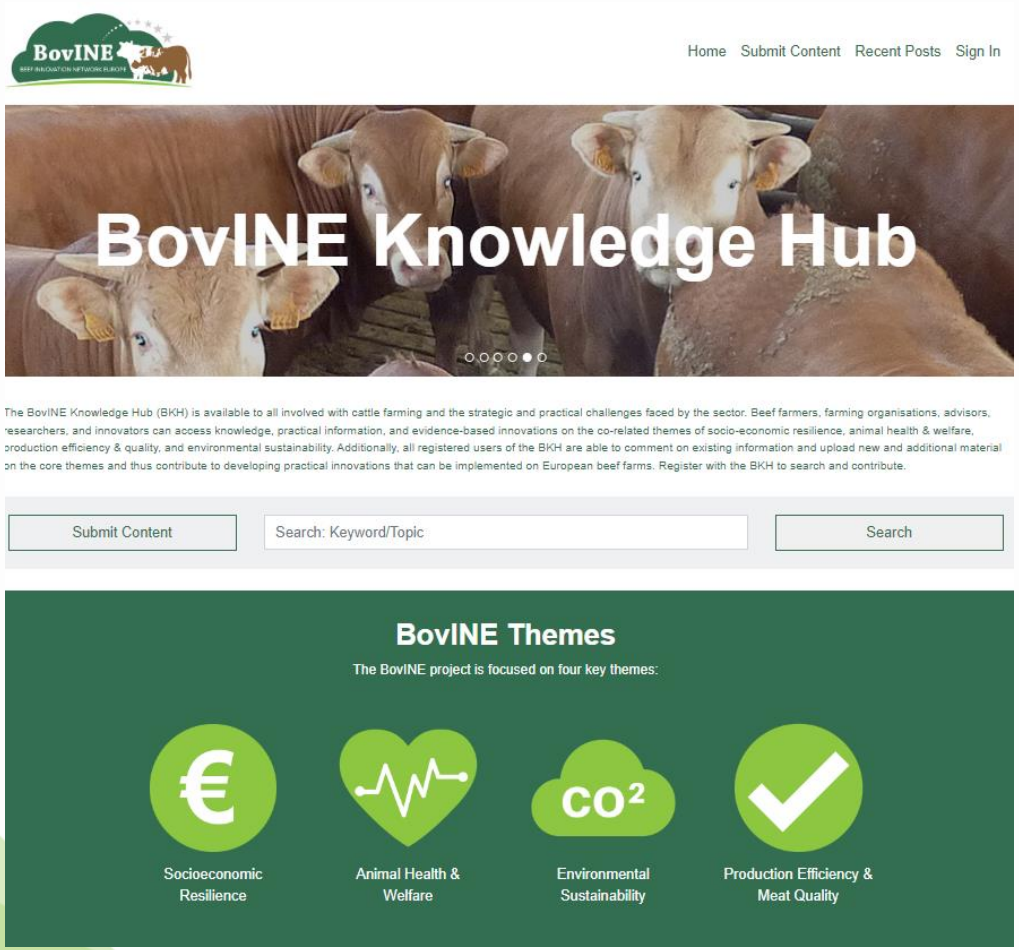
Priority Topics. Where can you see them?

PRIORITY TOPICS

GOOD PRACTICES

RESEARCH INNOVATIONS



https://hub.bovine-eu.net/

REGIONAL/NATIONAL MEETINGS

TRANSNATIONAL EVENT

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Final Comments

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BEEF INNOVATION NETWORK EUROPE

Transition to **sustainable livestock farming** requires the adoption of economically viable, environmentally beneficial and socially positive solutions.

Networking with stakeholders, with **farmers at the center**, is key to stimulate the adoption and long-term durability of effective solutions.

Despite the peculiarities of each country's beef sector, there are still many similarities in terms of needs and problems, to find **common solutions** and **collective learning**.

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Multiple networks formed across Europe

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Good mix of stakeholders


Farmers


Vets


Sales Companies


Scientists


Breed Societies

Feed Merchants

Policy makers


Advisors

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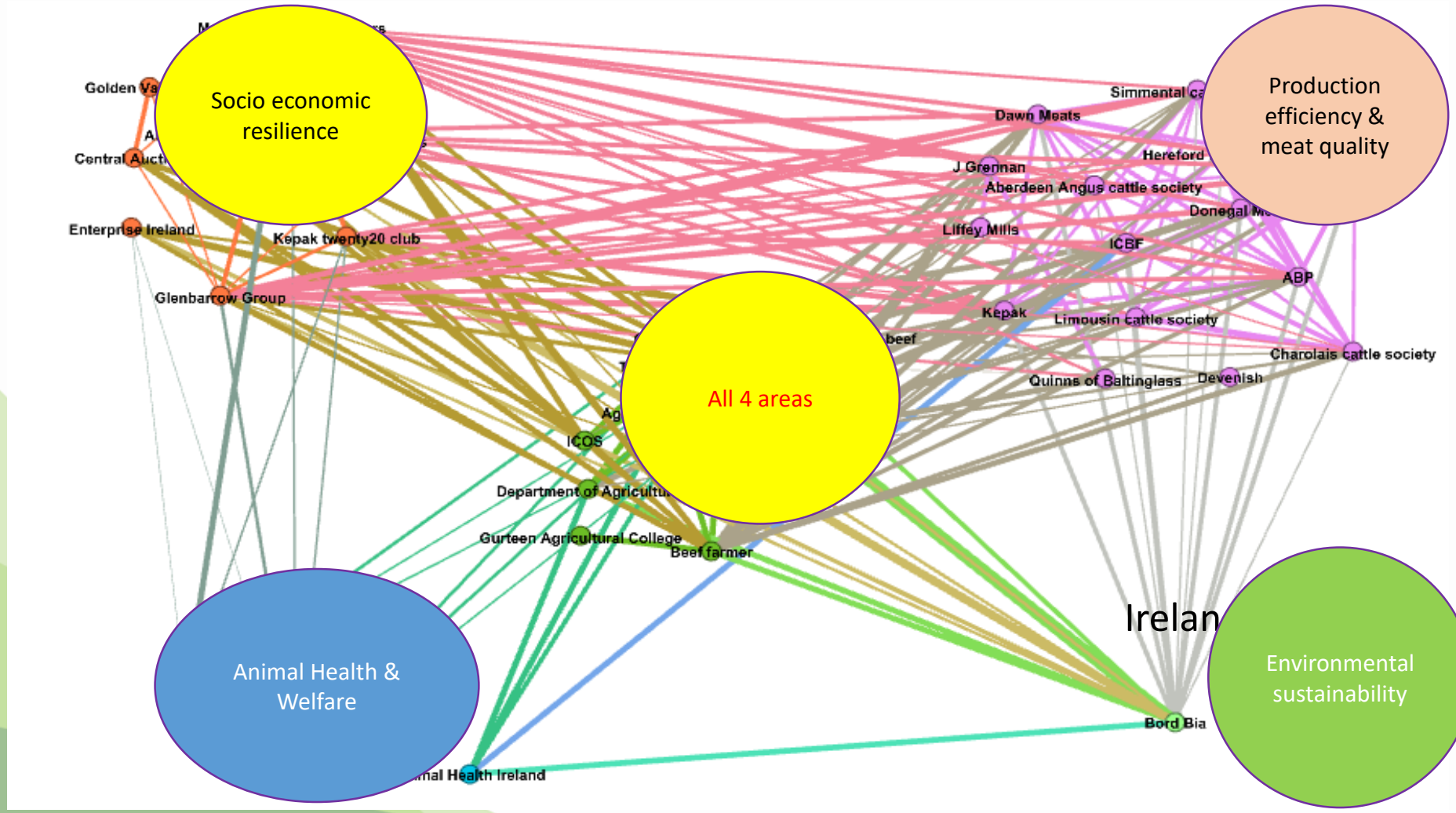
Good mix of stakeholders



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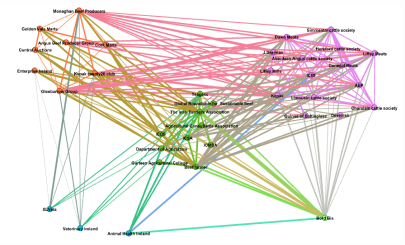
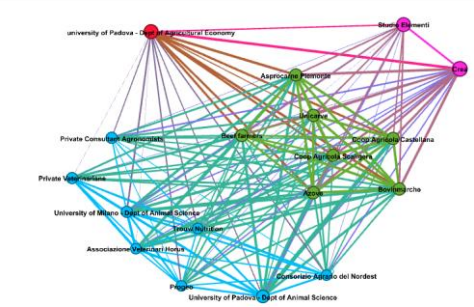
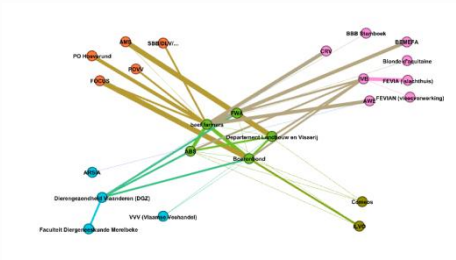
Multiple networks formed



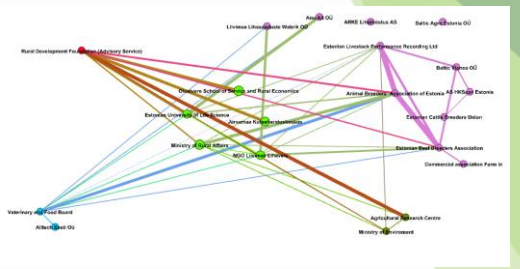
Ireland



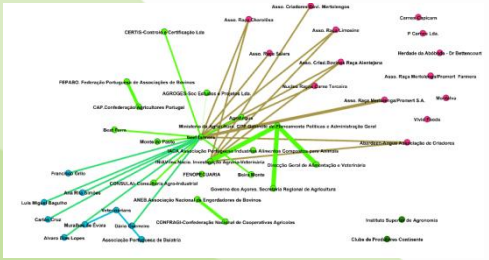
Italy



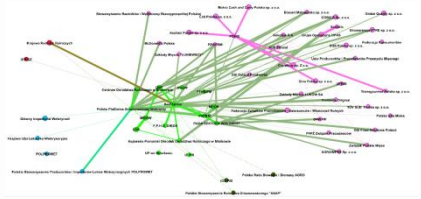
Belgium



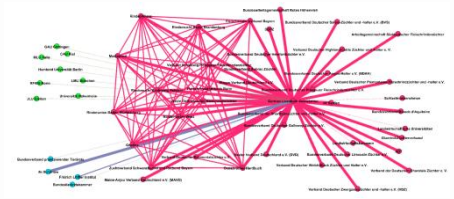
Estonia



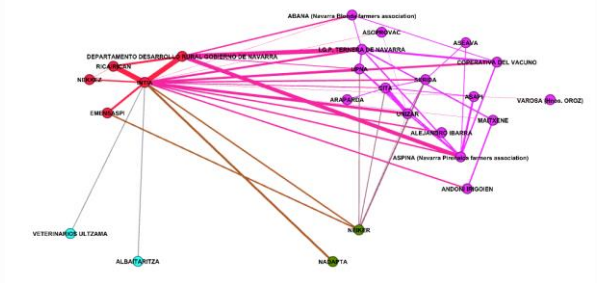
Portugal



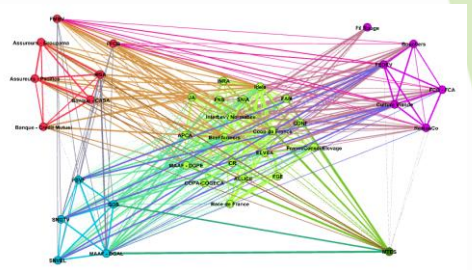
Poland



Germany



Spain



France

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Collecting Grass Roots Needs

Farm walks

Meetings and conferences

I would like to be more sustainable but …….

I have a problem with ……. on my farm

I need more information on ……..

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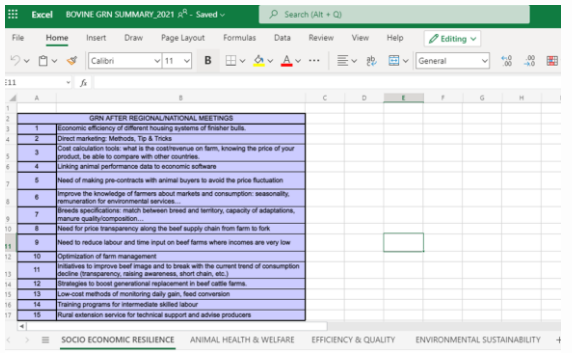
Identifying Grass root needs

9 national meetings each year across Europe

72 Grass root Needs identified each year



Grass Roots Needs Register

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Sample of Grass Roots Needs

Grass Roots Needs

Italy

High costs of raw materials for feeding

Estonia

Grassland-based feed rations

Priority Topic

The use of alternative feed stuffs

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Sample of Grass Roots Needs

Ireland

Vaccination protocols for live exports

Italy

On farm health check of calves prior to purchase

Priority Topic

On farm health check of youngstock prior to sale/purchase including vaccination status

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Sample of Grass Roots Needs

Belgium

Effects of feeding on the meat quality

Germany

Castration of young bulls in order to increase meat marbeling

Priority Topic

Animal feeding and stress on meat quality

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Sample of Grass Roots Needs

Poland

Certification for farms implementing production systems in which the carbon balance associated with the activity is favourable to the environment

Spain

The use of grasslands, as an element of carbon sequestration and monitoring of this process

Priority Topic

Reduction of Carbon footprint on beef farms

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Finding Solutions

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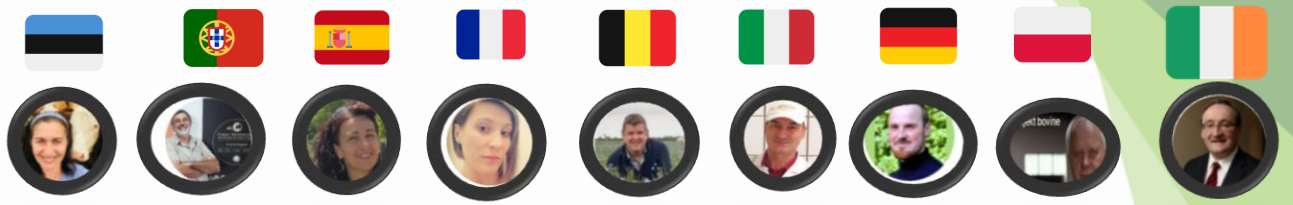
I would like to find some information on…….



Leader of Socioeconomic Resilience Theme

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Solutions to improve Socio-Economic Resilience

Kees de Roest –
Research Centre for Animal Production (CRPA) – Reggio Emilia - Italy

Final conference- 1st of December 2022

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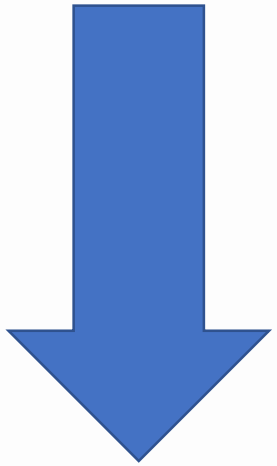
Remember to use the Q& A box at the bottom of the screen to ask your question



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Priority topics

	Economic planning tools for beef cattle farms
	Tools and strategies to manage for price volatility and cash flow
	Initiatives to improve beef image and to promote the sustainable consumpti
	Examining economically efficient housing systems for beef cattle
€	Fairer distribution of the final price along the supply/food chain
	Use of alternative feeds to reduce the high cost of raw materials for feeding

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The Teagasc eProfit Monitor

- an online financial analysis tool allowing farmers to obtain a detailed financial breakdown of each farming enterprise on their farm
- the software highlights strengths and weaknesses in financial performance by comparing to industry benchmarks
- it includes comparisons with:

a. previous years to monitor progress in achieving targets

b. industry benchmarks which oermits the analysis of impacts in farming system on farm profitability

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The Teagasc eProfit Monitor (2)

- This tool has been developed over a number of years. Initially it functioned as a computer-based tool and in recent years it has migrated on-line tool
- Farmers pay yearly subscriptions to receive an extension service from Teagasc advisors
- Data required includes

a. details of the product sold off the farm- both amounts sold (kg liveweight, tonnes of crop sold) and the total value (€) of all sales

b. details of all farm expenses/production expenses and overheads

c. the latest set of farm accounts - Balance sheet, Profit and Loss, Capital Accounts

- https://www.teagasc.ie/animals/dairy/financial/the-teagasc-eprofit-monitor-pm/

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Simulation model to cost home produced feed for ruminant stock

- The Grange Feed Costing Model (GFCM), developed in Excel, allows quantification and thereby understanding of the key relationships and variables influencing feed crop costs
- Improved understanding of feed crop costs provides researchers, extension and farmers with increased opportunities to manipulate these systems in order to achieve reduced feed costs
- Simulation approach ensures, that the range of criteria, under which alternative crop production or utilisation scenarios can be tested, is broad and flexible

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Simulation model to cost home produced feed for ruminant stock (2)

- The model has been developed on a spreadsheet platform in Excel
- Sixty eight feed crop production and utilisation options are modelled in the GFCM and are categorised as grass/legumes, cereals and beets
- Total feed costs (TFC) are expressed as € per hectare and per unit of feed DM, Net Energy and ME fed
- The model can be useful for farmers in other countries as well. It may provide an interesting tool to analyse the balance between home grown feed and the purchase of feed on the market, which is a crucial decision for many beef cattle farmers

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- Cookie crowbars (Poland)
- Brewers grains (Germany)
- Grazing Kale during winter time (Ireland)
- Mixture of ryegrass, triticale, wheat, alfalfa and peas (Italy)
- Vegetable by-products (Spain)
- Field beans (Belgium)
- Red clover (Ireland)
- Teff (Portugal)
- Press cake silage (Ireland)
- Grass silage and corn-cob mix (Italy)

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Significant factors able to reduce on-farm losses of beef cattle on beef finisher farms

- High on-farm losses (dead, euthanised and early culled animals) on beef finisher farms are associated with lower financial returns
- Investigating a large range of factors with a potential impact on mortality on 63 beef finisher farms in Austria, Germany and Italy
- Most relevant factors able to reduce on-farm losses on beef finisher farms are:

1. buy calves from one single farm
2. try to reduce the number of suppliers of newly bought-in animals by selecting suckler herds of bigger size capable of providing an entire batch of animals in a single delivery
3. use a dedicated quarantine area for animals at arrival

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Significant factors able to reduce on-farm losses of beef cattle on beef finisher farms

4. prepare a health plan for metaphylaxis and disease treatment
5. apply exact rations in line with cattle requirements and availability of feed ingredients
6. avoid mixing of animals before transportation, as transport of cattle can lead to increase susceptibility to disease

Metabolic disorders due to unbalanced feeding schemes may account for 42% of beef cattle mortality

Awareness raising can be triggered by beef cattle farmers' organisations, consultants and public animal health services

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Autofeed: Operational Group

Feeding automation for cattle farms in Lombardy (IT)

Partners:

- CREA – Research Centre for Engineering and Agro-Food Processing
- CRPA – Studies and Research Foundation
- Five dairy and beef cattle farmers

Objective:

- Carrying out an evaluation of the conditions of the use of the Automatic Feeding Systems (AFS) and of partially automated systems for rationing and ration management operations in dairy and beef cattle farms in Lombardy

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Automatic feeding systems

- The AFS consists of one or more self-propelled electric wagons that manage the ration of the groups independently and at variable frequency
- A fully automated kitchen fills the wagons with the ration to be offered to animals
- The wagons operate 24 hours/day, and they can manage different rations that the various groups of animals (of different breed and age) require
- The system also monitors the animal performances and the herd's status and provides support in establishing animal health, body condition and growth performance.

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Examples of AFS for beef production

Verona (Italy)

A 4 m^3 self-propelled, horizontal augers, electric driven, automatic wagon serves 960 beef cattle (all females in this farm for marketing strategies)

The kitchen is based on an array of electric-driven containers and silos for the upload of different feeds

Mantua (Italy)

A couple of 2 m^3 sycronized self-propelled, vertical auger, electric driven, automatic wagons serve 800 beef cattle of three different French breeds

The kitchen is based on an electric-driven crane and silos for the upload of different feeds

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Costs and benefits of Autofeed system

- Better feed conversion and higher daily weight gain, because the system allows cattle to be fed in line with their own eating needs according to breed, age and gender
- Reduction of labour input required to feed animals. Distribution of the ration twice a day using a traditional mixer wagon in a fattening herd of 600 is estimated to take 4 hours
- Reduced fuel consumption, as diesel fuel is no longer required to operate the mixer wagon
- Increased electricity consumption for the operation of the automatic wagon and of the driven crane for the upload of feeds
- Investments related to autofeed system: 172,000 € for 600 finishing bulls

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Change in technical performances of finishing farm

GERMANY – Beef Finishing farm 280 bulls sold per year

Finishing farm productivity before and after

	DE 280
Breed and type	Fleckvieh - bulls
n. places	415
Weight at start (kg)	85
Weight at end (kg)	720

	Before	Aut. feeding system
Daily weight gain (gr/day)	1.210	1.246
Finishing period (days)	525	510
Bulls sold per year (n.)	283	291
Weight sold (tons l.w.)	204	210
Bulls finished per place (n.)	0,68	0,70

Automated feeder wagon and kitchen

	DE 280
Automated feeder wagon (n.)	1
Total investment (€)	172.000
Depreciation period (years)	10

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Change in production costs of finishing farm

DE 280 - Costs per bull and per100 kg lw. sold before and after

	Before		Aut. feeding system	
	€/head sold	€/100 kw l.w.	€/head sold	€/100 kw l.w.
Non factor costs	**1.401**	**194,6**	**1.370**	**190,3**
Animal purchase	468	65,0	468	65,0
Feed*	547	75,9	540	75,0
Machinery (mainten., depr, contractor.)	129	17,9	125	17,4
Fuel and energy	40	5,5	24	3,3
Buildings (mainten. and depr.)	74	10,3	72	10,0
Vet. and medecine	27	3,7	26	3,6
Insurances and taxes	33	4,6	32	4,5
Other inputs	84	11,6	82	11,4
Labour cost	103	14,3	75	10,4
Land cost	131	18,2	128	17,7
Capital cost	57	7,9	56	7,7
Aut. feeding system depreciation	-	-	59	8,2
Total cost	**1.693**	**235,1**	**1.688**	**234,5**

Var.: -0,3%

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Change in production costs of finishing farm in selected countries after introduction of Autofeed system

	€/100 kg l.w.	% change
DE - 280	235,1	-0,3
DE - 525	230,6	-0,3
IT - 910	271,5	-0,7
IT - 2660	261,7	-0,8
ES - 430	257,5	-0,1
ES - 490	260,2	-0,2
ES - 820	238,4	-1,6
IE - 200	293,3	0,9

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Analysis of costs and benefits

- Application of liquid slurry with trailing shoe
- Automatic weighing systems
- Ceiling fans
- Establishment of calving season
- Factors able to reduce losses
- Linseeds for reducing methane emissions
- Rubber mats on slatted floors
- Squeeze technique for dummy calves
- Virtual fences

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€

Local producer market in superstores (Portugal)

The reality: in the beef production supply chain, there are several factors that influence the price paid to producers and the price of the final product to the consumer, a fact that increasingly translates into a weaker position of producers towards retailers.

The issue: The increasing bargaining power of multiple retailers, that is always being put forward as one of the causes of an unfair distribution of welfare between demand and supply.

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€

Local producer market in superstores (Portugal)

- Direct selling is granting the producer granting a greater voice and bargaining power
- Retailers have created a sales concept to specifically support local producers
- Existence of local producers' markets within the supermarket infrastructure
- By selling their products locally, there is less need to transport the products between regions
- By decreasing the use of transport: less fuel use and GHG emissions

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€

Local producer market in superstores (Portugal)

The challenges:

- Biggest challenge is the product itself in the case of beef cattle, as producers always need a slaughterhouse at the process of converting the cattle into meat, and in this case slaughterhouses can intervene in pricing.
- Another challenge may be finding a retailer that supports this concept

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Co-operation between NGO Liivimaa Lihaveis and Linnamäe Meat (Estonia)

€

The challenges:

- The NGO Livimaa Lihaveis was established back in 2011, with the aim of obtaining a higher price for its members and marketing meat.
- Today, it is also a certified grassfed beef quality scheme producer group with 77 members

http://media.voog.com/0000/0039/1935/files/LIHAVEIS_30s_v2_29092021.mp4

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Co-operation between NGO Liivimaa Lihaveis and Linnamäe Meat

Impact on performance

- Farmers are interested in cooperating with the NGO and the meat industry, and the cooperation over several years already inspires confidence
- It is certainly possible to get a higher price from time to time, but the stability of the meat market and the knowledge that you will always get your money is also a great value.

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Any Questions so far ?

Remember to use the Q& A box at the bottom of the screen to ask your question

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Solutions to improve Animal Health and Welfare

Alexander Riek
Friedrich-Loeffler-Institut
Federal Research Institute for Animal Health
Germany

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Priority Topics

- Health & welfare of new born calves on suckler farms (30)
- On farm health check of youngstock prior to sale/purchase including vaccination status (16)
- Determining causes of lameness in beef cattle (22)
- Management, housing, and environmental factors which affect animal welfare in rearing and finishing units (15)
- Simple labour-saving tools to measure and communicate high animal welfare standards on beef farms (19)
- Training in animal welfare for operators/farmers (handlers, transporters and slaughterhouses) (15)

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Solutions to improve Animal Health and Welfare

BovINE
BEEF INNOVATION NETWORK EUROPE

Determining causes of lameness in beef cattle

Infrared Thermography for Diagnosis of Lameness

This project has received funding from the European Union's Horizon 2020 rural renaissance programme | Project No: 862590 under call H2020-RUR-2019-15

SCAN ME

Infrared Thermography for Diagnosis of Lameness

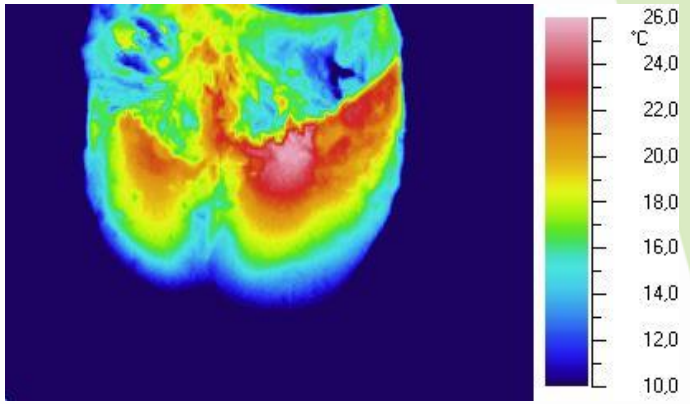
BovINE
BEEF INNOVATION NETWORK EUROPE

- Lameness is a significant problem that affects the overall productivity and profitability of cattle operations.

- Several studies have suggested that increased foot temperature, detected using infrared thermography, is a potentially useful technique for identifying lameness

  - It is a non invasive indicator / a non-contact detecting technology obtaining reliable data without undue stress reactions

  - It may even be used to detect subclinical pathological signs and inflammation before the disease becomes evident



DTW 2008 (15)

So far mainly used in dairy cattle but also useful for fattening cattle

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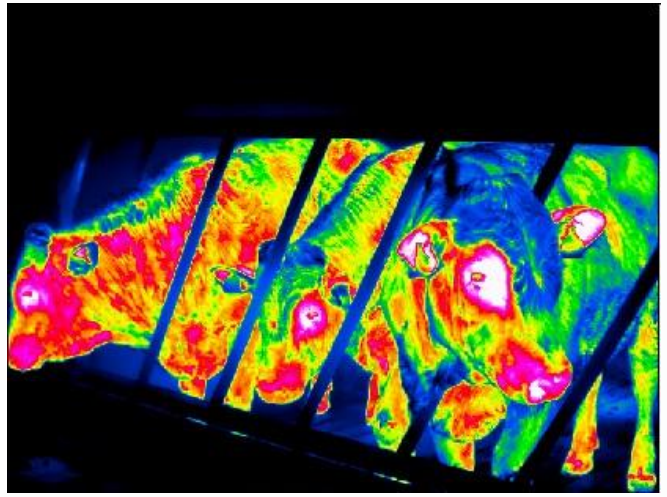
Infrared Thermography for Diagnosis of Lameness

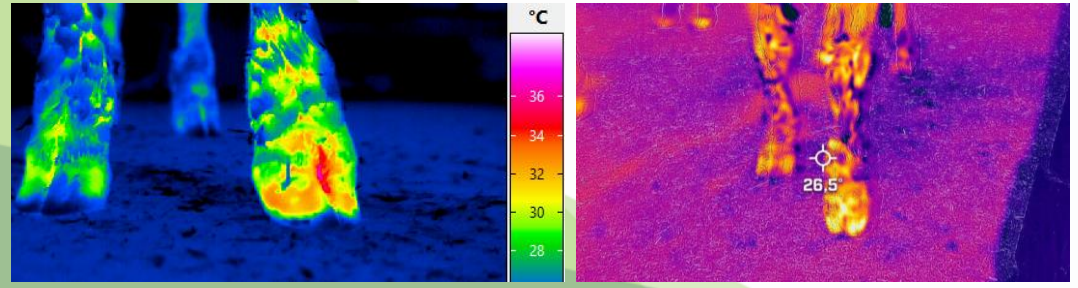
BovINE
BEEF INNOVATION NETWORK EUROPE

Taking IR images of lame bulls (separated)



Taking IR images of
3 bulls in the stable

Comparing different camera systems



Filming
young bulls
during driving

https://youtu.be/oQ6j7xJg47E

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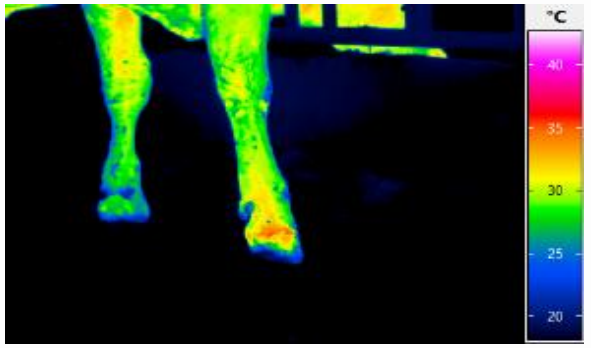
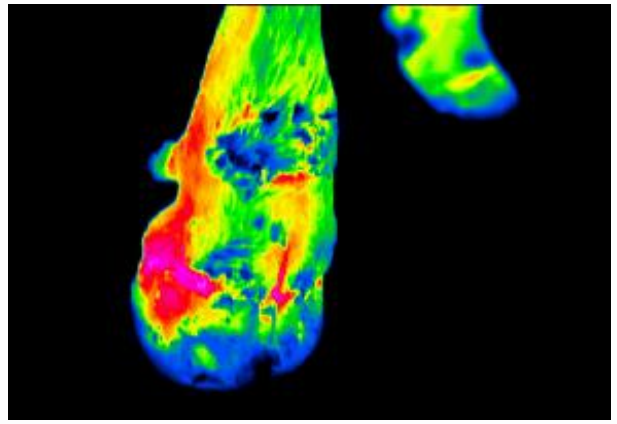
SCAN ME

Infrared Thermography for Diagnosis of Lameness

BovINE
BEEF INNOVATION NETWORK EUROPE

- With infrared thermography it is possible
  - to diagnose lameness early
  - to clarify suspicions
- Problem
  - short distance to the animal
- Best conditions
  - Animal on flat floor (not on straw)
  - max. 2 m distance to the animal
  - free field of view
  - Fixation of the animal might be necessary
  - Use second leg as comparison





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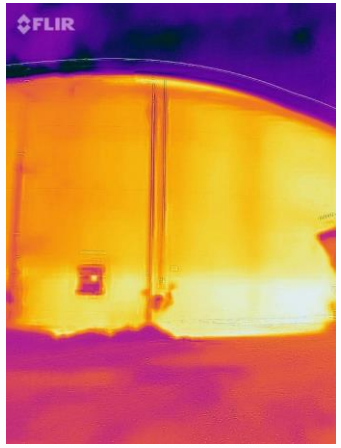
Infrared Thermography for Diagnosis of Lameness

BovINE
BEEF INNOVATION NETWORK EUROPE

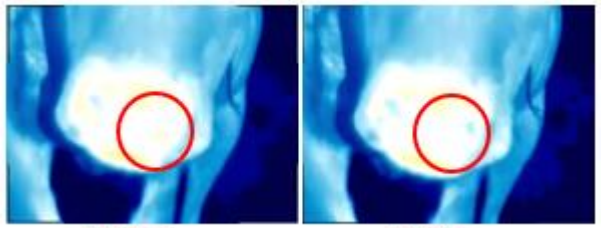
Hint from farmer in Germany:

- Use Smartphone version to
  - check post-heating of silage
  - check filling level of biogas plant



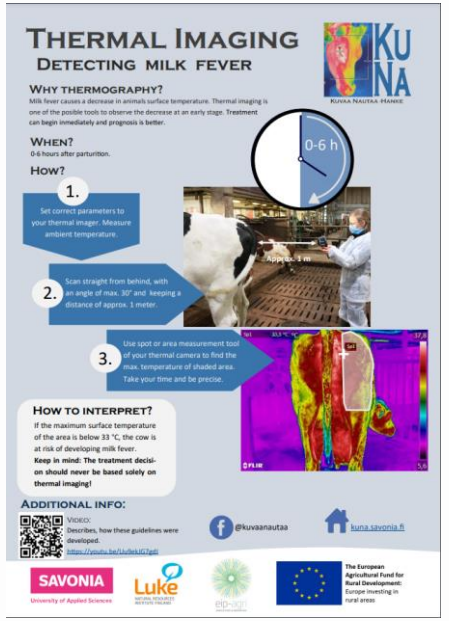
RI from literature:

- Use for checking the respiration rate of calves



Factsheets from Kuvaa Nautaa project:

- Use for early detection of milk fever
- Use for monitoring hoof health



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Infrared Thermography for Diagnosis of Lameness

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BovINE Material:

- BovINE article (including EIP AGRI Practice abstract + links to literature)
  https://hub.bovine-eu.net/recognising-causes-of-lamness/infrared-thermography-for-the-diagnosis-of-lameness

- Demonstration in Germany (including videos and pictures)
  https://hub.bovine-eu.net/recognising-causes-of-lamness/demonstration-infrared-thermography-for-diagnosis-of-lameness

- Demonstration in Belgium (including videos and pictures)
  https://hub.bovine-eu.net/recognising-causes-of-lamness/demonstration-infrared-thermography-for-diagnosis-of-lameness-belgium

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Solutions to improve Animal Health and Welfare

BovINE
BEEF INNOVATION NETWORK EUROPE

Simple labour-saving tools to measure and communicate high animal welfare standards on beef farms

On-farm-scoring for bovine respiratory disease (BRD)

This project has received funding from the European Union's Horizon 2020 rural renaissance programme | Project No: 862590 under call H2020-RUR-2019-15

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On-farm-scoring for BRD

BovINE
BEEF INNOVATION NETWORK EUROPE

- Bovine respiratory disease (BRD) is the most common cause of morbidity and mortality in feedlot cattle
- Various studies point to the negative effects of BRD on daily gain and carcass weight
- A combination of a new scoring system and an app developed for this purpose helps reduce BRD prevalence and improve weaned calf health
- The tool is designed to be herd-specific to help producers identify the risk of their calves and the management changes needed to control BRD on their farm

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SCAN ME

On-farm-scoring for BRD

- This new BRD scoring system was develop at UC Davis
- The scoring system is based on the presence or absence of **six clinical signs**, each of which is assigned a model-based score
- BRD scoring system is suitable for use on farms because of its simple design
- It can help to provide sensible medical intervention in BRD cases and reduce unnecessary treatment of animals with antimicrobials.

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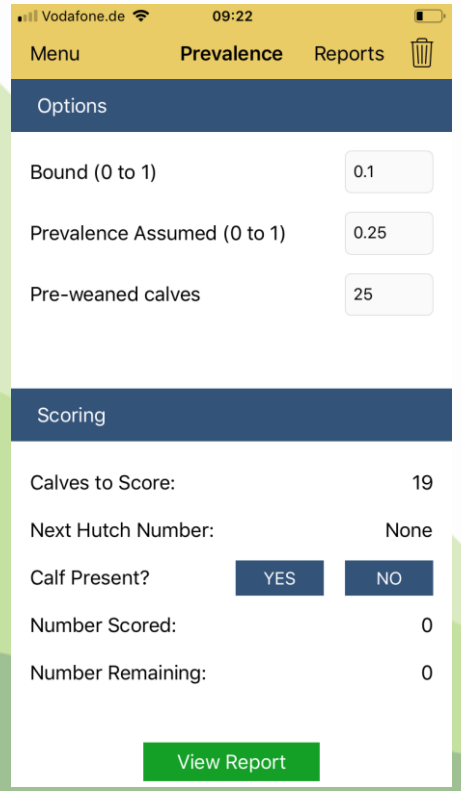
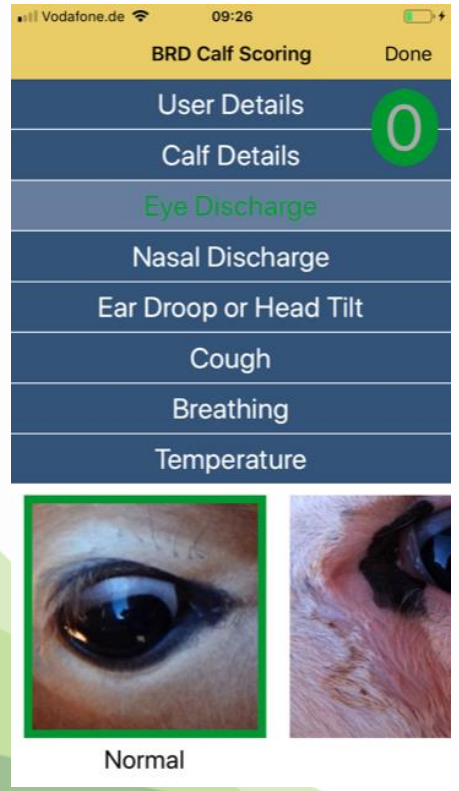
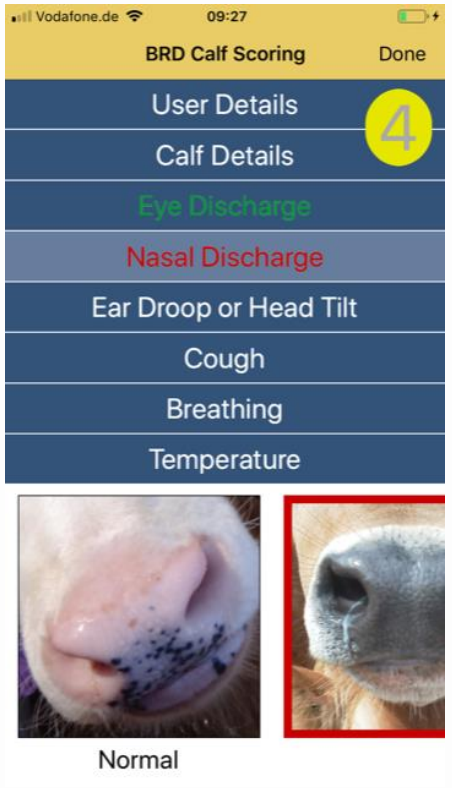
On-farm-scoring for BRD

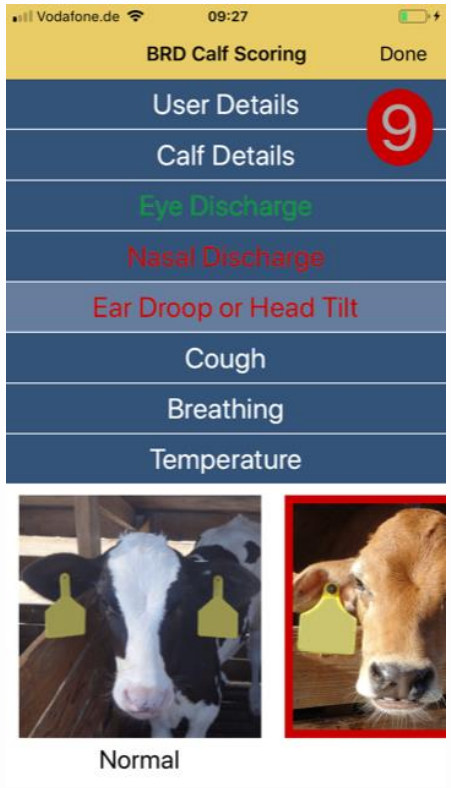
BovINE
BEEF INNOVATION NETWORK EUROPE

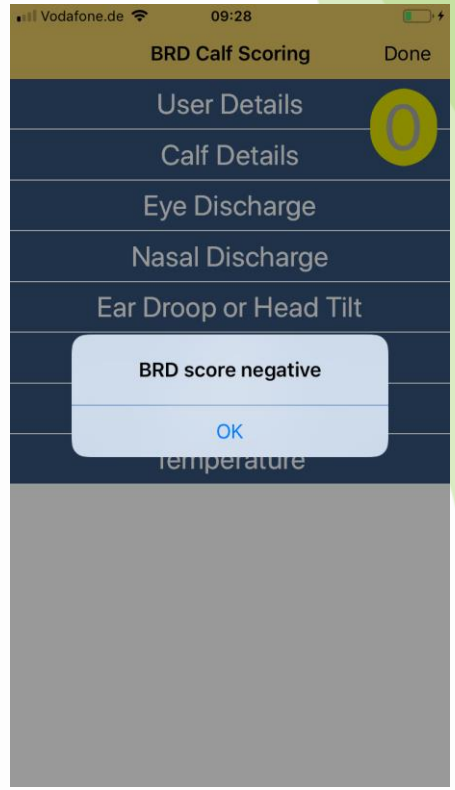
App developed is easy to use and shows results immediately











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On-farm-scoring for BRD

BovINE
BEEF INNOVATION NETWORK EUROPE

BovINE Material:

- BovINE article (including EIP AGRI Practice abstract + links to literature)

  https://hub.bovine-eu.net/recent/on-farm-scoring-for-brd-ca-brd-scoring-system

- Two demonstrations in Germany FLI+BRS (including videos and pictures)
  - https://hub.bovine-eu.net/simple-labour-saving-tools-to-measure-and-communicate-high-animal-welfare-standards-on-beef-farms/demonstration-on-farm-scoring-for-bovine-respiratory-disease
  - https://hub.bovine-eu.net/simple-labour-saving-tools-to-measure-and-communicate-high-animal-welfare-standards-on-beef-farms/demonstration-on-farm-scoring-for-bovine-respiratory-disease-germany

- Demonstration in Spain (pictures and fact sheets)

  https://hub.bovine-eu.net/simple-labour-saving-tools-to-measure-and-communicate-high-animal-welfare-standards-on-beef-farms/demostration-on-farm-scoring-for-bovine-respiratory-disease-ca-brd-scoring-system

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Solutions to improve Animal Health and Welfare

BovINE
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Management, housing, and environmental factors which affect animal welfare in rearing and finishing units

Ventilation tubes ensure healthy cattle

This project has received funding from the European Union's Horizon 2020 rural renaissance programme | Project No: 862590 under call H2020-RUR-2019-15

SCAN ME

Ventilation tubes ensure healthy cattle

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- With climate change the number of hot days are increasing
- Old barns are often closed on three sides
- Combination of dung mattress and low ceiling hight -> poor air quality
- Poor air quality leads to respiratory disease and slow growth in calves

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Ventilation tubes ensure healthy cattle

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- A fan forces air from outside through tubes up to 30 m length
- The tubes have small openings to distribute the air throughout the full length of the barn
- The hoses, made of washable textile, prevent the formation of condensation water
- Practical experience show that the system can significantly improve air quality -> increases calf health, daily weight gain, decrease medication costs

https://www.lichtundluft.com/schlauchlueftung.html

https://www.frischluft-im-stall.de/cat-3000-mit-erwaermter-frischluft-im-kaelberstall/

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Ventilation tubes ensure healthy cattle

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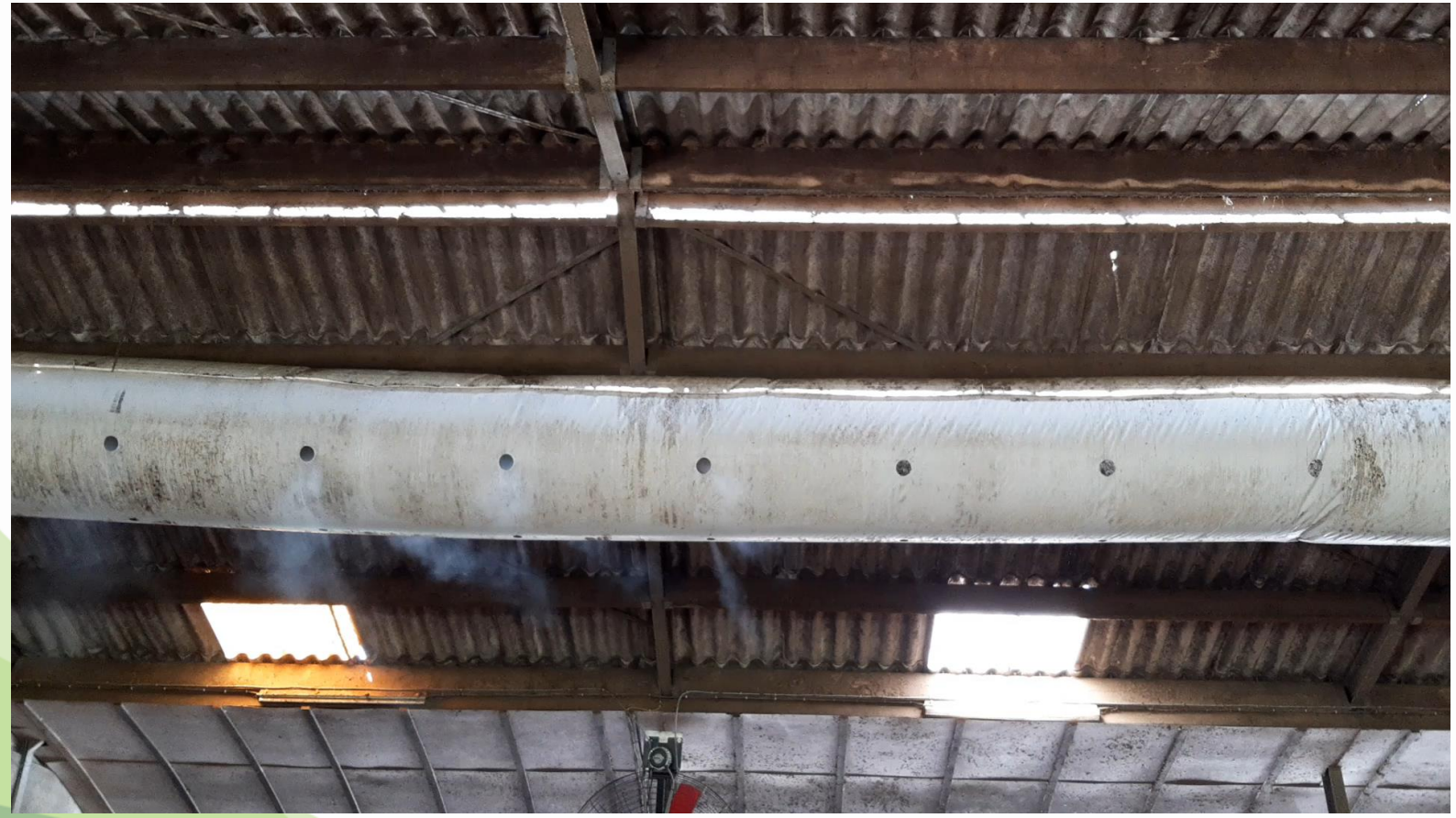

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Ventilation tubes ensure healthy cattle

BovINE
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BovINE Material:

- BovINE article (including links to literature and websites)

  https://hub.bovine-eu.net/recent/ventilation-tubes-ensure-healthy-calves

- Demonstration in Belgium (Video and pictures)

  https://hub.bovine-eu.net/management-housing-and-environmental-factors-which-affect-animal-welfare-in-rearing-and-finishing-units/demonstration-tube-ventilation

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Solutions to improve Animal Health and Welfare

BovINE
BEEF INNOVATION NETWORK EUROPE

Health & welfare of new born calves on suckler farms

Thoracic Squeeze technique in new-born calves with maladjustment syndrome

This project has received funding from the European Union's Horizon 2020 rural renaissance programme | Project No: 862590 under call H2020-RUR-2019-15

SCAN ME

Thoracic squeeze technique in new-born calves

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- Typical behaviour of dummy calves
  - indifference to environmental stimuli
  - lack of affinity for the dam
  - failure to find the udder
  - refuse to suck even when helped
  - aimless wandering or motionless standing

Martha d'Andrade & George Stilwell

- Those calves usually die or need costly and prolonged care for obvious reasons.

- In dummy foals the "Madigan squeeze technique" has been used with success for years and it has been tested on calves by George Stilwell and several practitioners

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Thoracic squeeze technique in new-born calves

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- Physical compression of the chest helps the newborn with neonatal maladjustment syndrome
- The compression induces a slow wave sleep and hormone changes (for details see Stilwell et al. 2019)
- Calves are subjected to the squeezing technique for 20 minutes
- A soft cotton rope, approximately 3 cm wide, is passed around the calves' chest and abdomen

Photo credit: Lena Lindau

Stilwell, G. et al. (2019): Potential benefit of a thoracic squeeze technique in two newborn calves delivered by caesarean section. New Zeland Veterinary Journal 68, 65-68.

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SCAN ME

Thoracic squeeze technique in new-born calves

BovINE
BEEF INNOVATION NETWORK EUROPE

- The calves are then forced to lie down while the loop around the chest is tightened
- After a short struggled calves go into a deep sleep that is manifested by closed eyes, no limb movement and slow breathing
- The calves are then awaken and the rope removed
- They get up after a few seconds and walk towards the dam to suckle

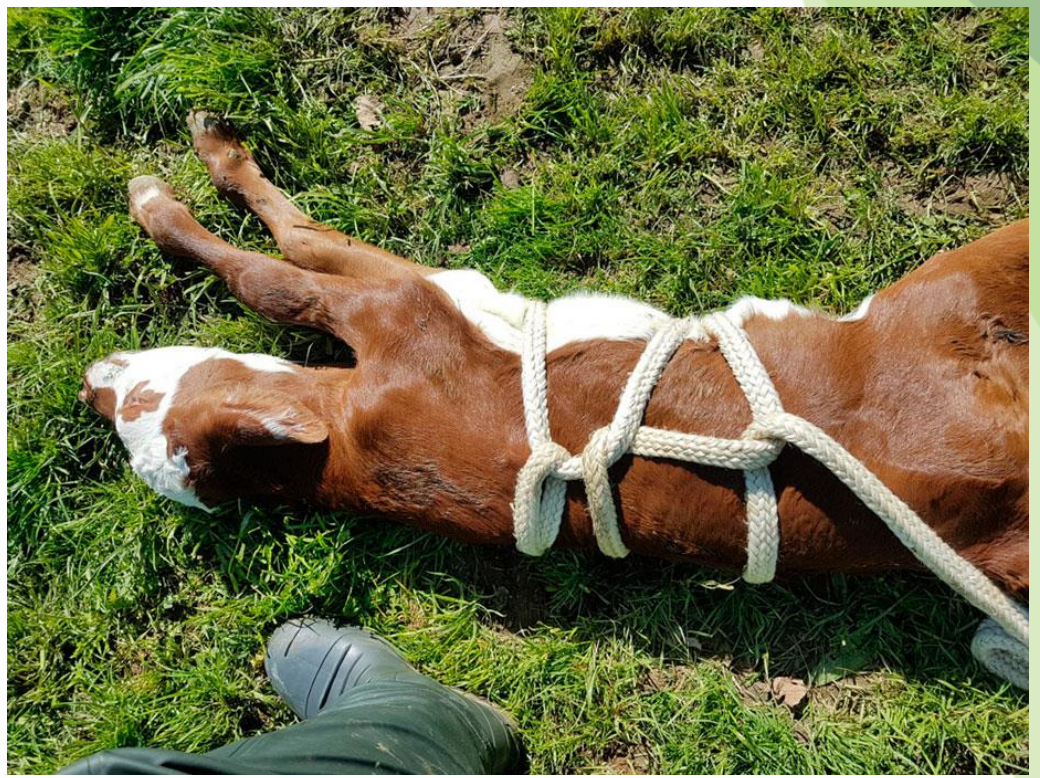

Photo credit: George Stilwell

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SCAN ME

Thoracic squeeze technique in new-born calves

BovINE
BEEF INNOVATION NETWORK EUROPE

BovINE Material:

- BovINE article (including EIP AGRI Practice abstract and links to literature)

  https://hub.bovine-eu.net/search/squeeze-technique-for-dummy-calves
- Demonstration in Ireland

  https://hub.bovine-eu.net/new-born-calves-suckler-farms/demonstration-thoracic-squeeze-in-new-born-calves-with-maladjustment-syndrome-ireland
- Demonstration in Portugal (including video and pictures)

  https://hub.bovine-eu.net/new-born-calves-suckler-farms/demonstration-thoracic-squeeze-in-new-born-calves-with-maladjustment-syndrome-portugal-on-farm
- Demonstration in Germany (including video and pictures)

  https://hub.bovine-eu.net/new-born-calves-suckler-farms/demonstration-thoracic-squeeze-in-new-born-calves-with-maladjustment-syndrome-germany
- Webinar from Portugal (including presentation)

  https://hub.bovine-eu.net/new-born-calves-suckler-farms/demonstration-thoracic-squeeze-in-new-born-calves-with-maladjustment-syndrome-portugal-webinar
- Cost-Benefit-Analysis

  https://hub.bovine-eu.net/new-born-calves-suckler-farms/costs-and-benefirs-of-the-squeeze-technique

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Thank you for your attention!

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Any Questions so far ?

Remember to use the Q& A box at the bottom of the screen to ask your question

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We now have a short coffee break

Back at 11.15 CET

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Addressing Beef Production Efficiency and Meat Quality

Virginia Resconi
University of Zaragoza
Spain

This project has received funding from the European Union's Horizon 2020 rural renaissance programme | Project No: 862590 under call H2020-RUR-2019-15

SOLUTIONS TO PRIORITY TOPICS

Virginia C. Resconi – Thematic Leader WP5

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Priority topics

2020

- **Animal monitoring tools** in the finishing phase
- The use of **available data to improve** carcass and meat **quality**

2021

- **Animal feeding and stress on meat quality**
- Optimizing the number of **calves per cow per year** in suckler beef herds

2022

- **Tools to evaluate** the carcass and meat **quality** prior to and in the slaughterhouse
- On-farm strategies to **increase meat quality**

This project has received funding from the European Union's Horizon 2020 rural renaissance programme | Project No: 862590 under call H2020-RUR-2019-15

Priority topic → **Solution**

Animal monitoring tools in the fattening phase → **Virtual fencing**

Automated weight

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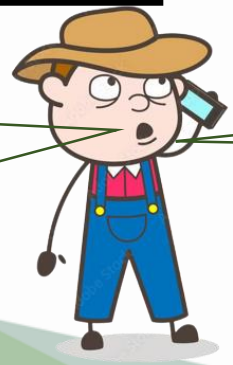
Virtual fencing

"The system works, keeping the animals in the delimited place and avoiding risks of them falling in dangerous mountain areas"



*"Gives **peace of mind** knowing where animals are at all times, but it is still too expensive"*

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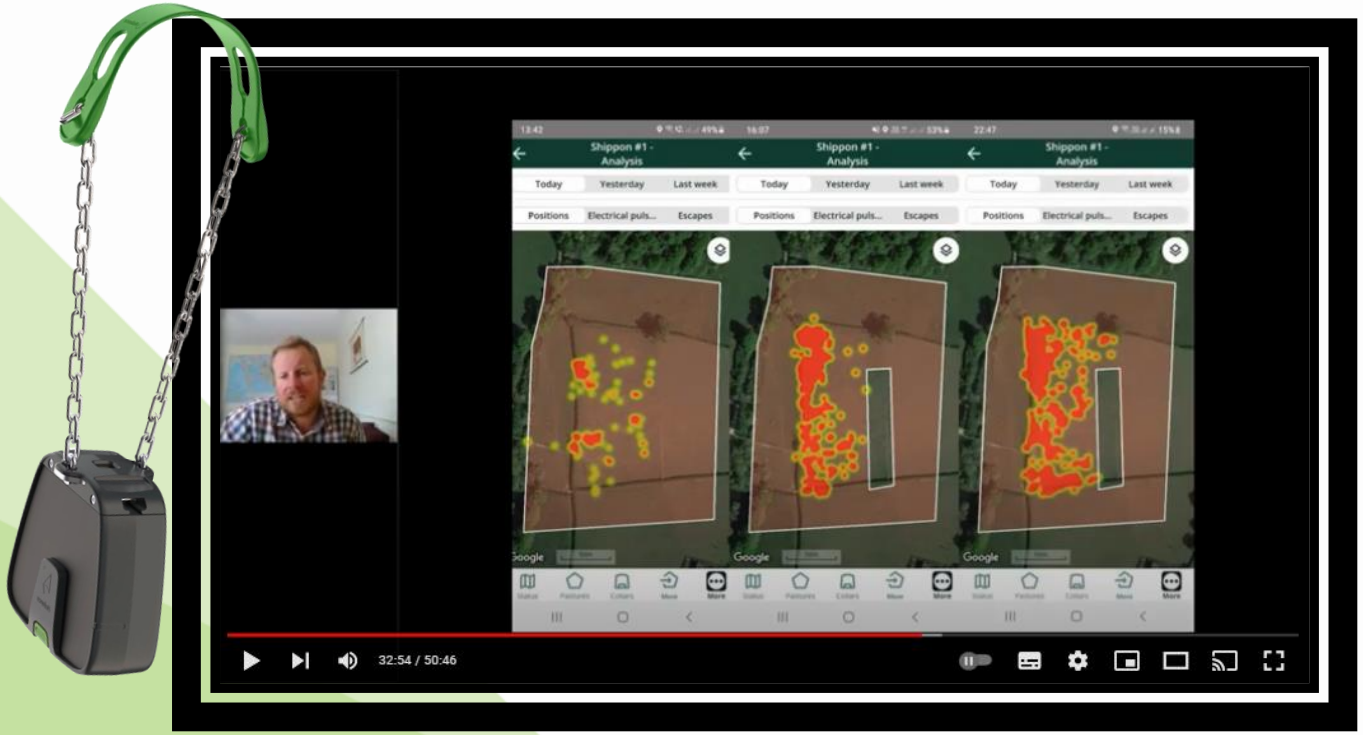

Russ Carrington member of EIP-AGRI - Focus Groups - Sustainable beef production systems **showing how animals learn to use the system in few days**

- Holistic management
- Rewilding projects
- Firewall

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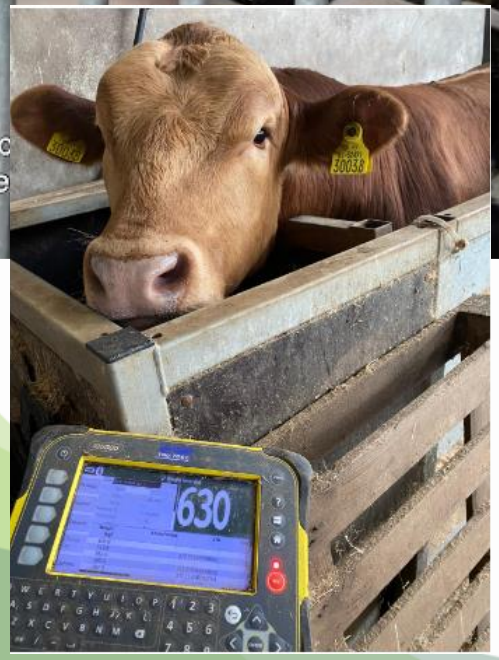
Automated weight



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Francisco Maroto (Universidad de Córdoba, Spain)

Digitanimal system

Simulation with real data:

- 39 calves 242 kg at 2.97 €/kg
- DWG 1.28 kg/d
- 1.64–2.64 €/d feed + 0.3 €/d straw
- Carcass price 4 €/kg

Optimal slaughter time:

+1,818 €/batch

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Priority topic

Solution

The use of available data to improve carcass and meat quality

Prediction of carcass value at the time of sale

Genetic improvement for eating quality traits

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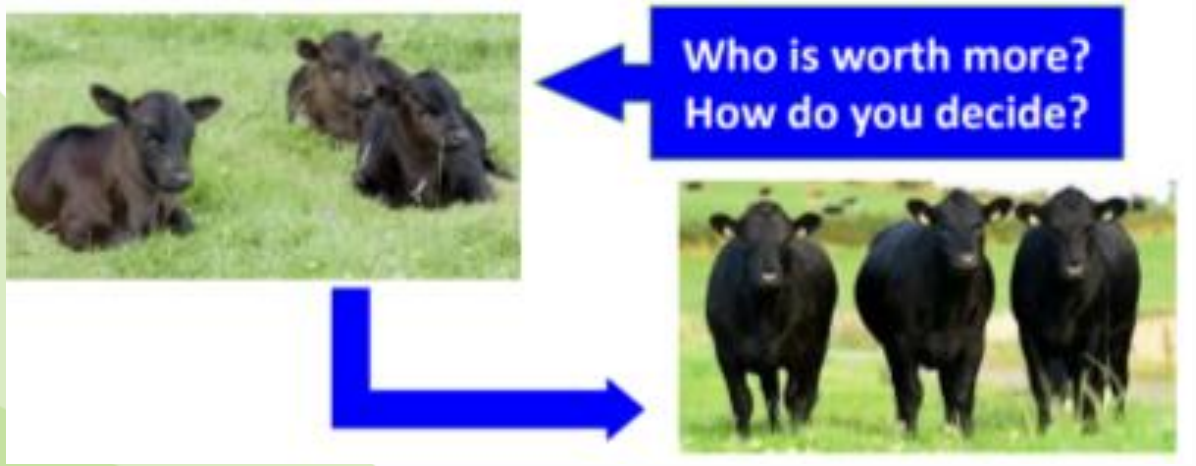
Prediction of carcass value at the time of sale

Breed of the calf, its age and the time of the year



Beef's Own Worth = B.O.W.

Genetic merit

- Feed intake, carcass weight, fatness, conformation and value

Non-genetic effect (own animal)

- Birth year, twin, live weights

Non-genetics factors (dam)

- Breed fraction, parity, age, permanent environment

- Pilot Innovation being integrated into the ICBF (Irish Cattle Beef Federation) database
- Provide the **buyer** with more confidence
- Encourage the **seller** to be more focused on breeding for better carcass traits, **including dairy farmers** selling calves for beef → more efficient production
- Future is to be available for all animals, of any age, destined for slaughter

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Genetic improvement for eating quality traits

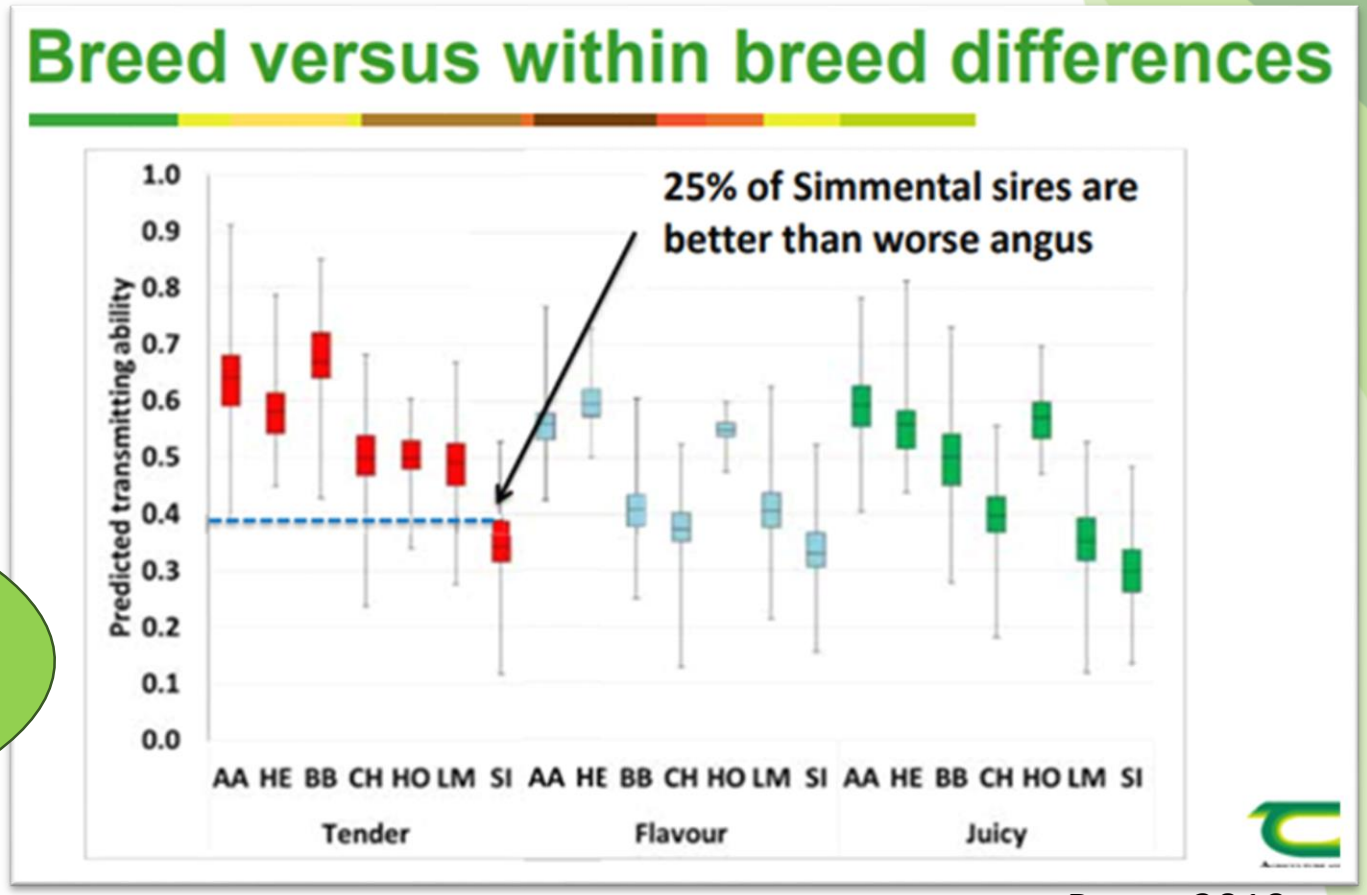
Genetic evaluation system form 2020 for Irish beef cattle:

- EUROP carcass classification data
- Data collected on the primal cuts
- Meat eating quality: **tenderness, juiciness, flavour**

Beef of superior eating quality can be achieved in a cumulative and permanent way

*The main challenge of developing this innovation was the **collection of accurate sensory data** on meat eating quality in order to develop reliable genetic evaluations, whilst, **finding a fair way to economically reward stakeholders for beef quality** will be a major challenge for the future*

A. Cromie, ICBF



Berry, 2019

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Priority topic

Solution

Animal <u>feeding</u> and stress on meat quality

Beef circularity through vegetable by-product feeding strategies

Sponge cake and cake scraps in finishing cattle feeding

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Vegetable by-products

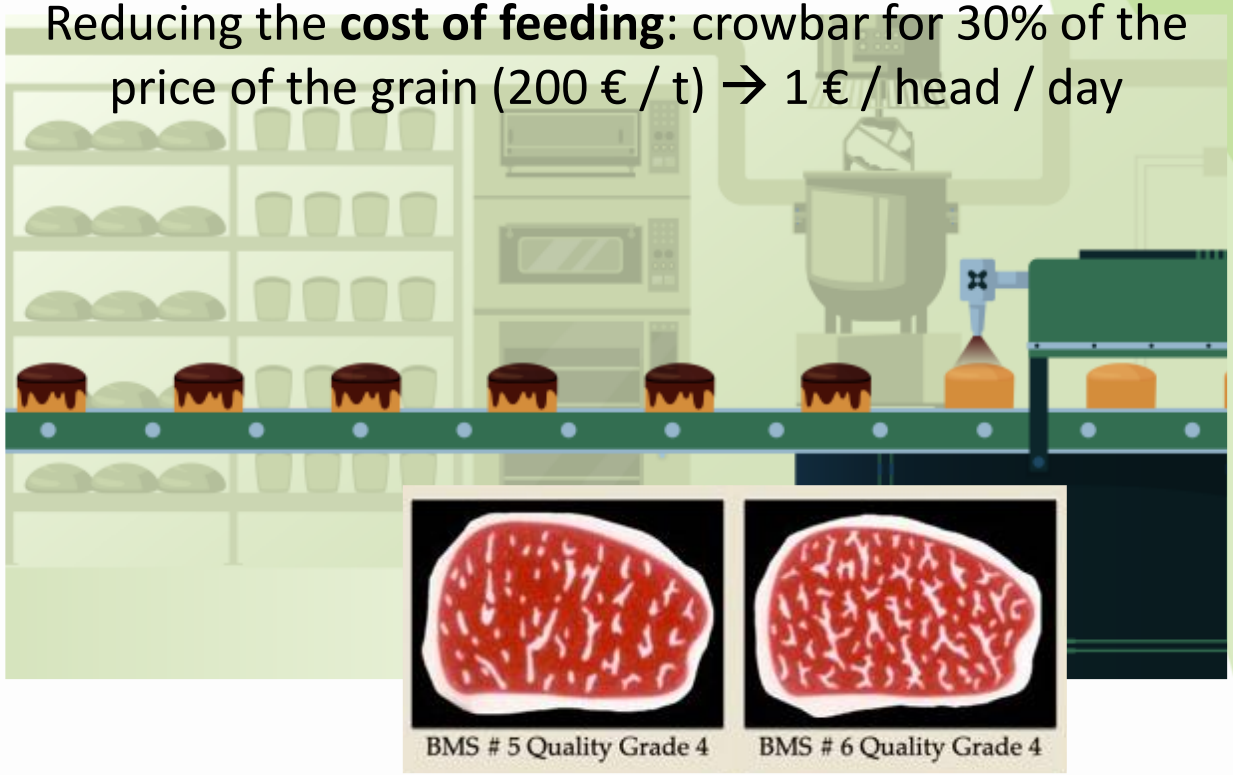
Micro-silages

PGI beef

120-day finishing, 50% replacement of cereal

Improvement in the **marbling** of the meat

Reducing the **cost of feeding**: crowbar for 30% of the price of the grain (200 € / t) → 1 € / head / day



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Priority topic

Solution

Animal feeding and stress on meat quality

Gently touching of beef calves early in life reduces stress at the abattoir

Analogue of maternal appeasing pheromones in beef cattle

This project has received funding from the European Union's Horizon 2020 rural renaissance programme | Project No: 862590 under call H2020-RUR-2019-15

Applied Animal Behaviour Science 139 (2012) 42–49

Contents lists available at SciVerse ScienceDirect

Applied Animal Behaviour Science

journal homepage: www.elsevier.com/locate/applanim

Gentle touching in early life reduces avoidance distance and slaughter stress in beef cattle

Johanna K. Probst[a,b], Anet Spengler Neff[a,*], Florian Leiber[b], Michael Kreuzer[b], Edna Hillmann[b]

[a] Research Institute of Organic Agriculture, Section Animal Husbandry, Ackerstrasse/Postfach, FiBL, 5070 Frick, Switzerland
[b] ETH Zurich, Institute of Agricultural Sciences, Universitaetsstrasse 2, 8092 Zurich, Switzerland

Livestock Science 238 (2020) 104067

Contents lists available at ScienceDirect

Livestock Science

journal homepage: www.elsevier.com/locate/livsci

Short communication: Administration of an appeasing substance to *Bos indicus*-influenced beef cattle improves performance after weaning and carcass pH

B.I. Cappellozza (Conceptualization; Methodology; Validation; Formal analysis; Investigation; Resources; Project administration; Supervision; Writing – original draft; Writing – review & editing)[a,*], J.P. Bastos (Investigation; Resources; Data curation)[b], R.F. Cooke (Conceptualization; Methodology; Validation; Formal analysis; Writing – original draft; Writing – review & editing)[c]

[a] Nutricorp, Araras, SP, 13601-000, Brazil
[b] Infinity Consultoria, São Paulo, SP, 06541-038, Brazil
[c] Department of Animal Science, Texas A&M University, College Station, TX, 77845, USA

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Priority topic

Solution

Optimizing the number of calves per cow per year in suckler beef herds

- **Good practices in a high genetic Limousine suckler beef farm**
- **A suckler-fattening farm in France without unproductive females**
- **Using a measuring tape for timing the first mating**

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Good practices in a suckler beef farm in Italy

Specific diets for heifers, lactating/dry cows, calves before/after weaning

Diagnosis of pregnancy after 70 d staying with the bull + 2 (before weaning)

A week before calving, cows are moved to a **calving area** and attached with a **calving sensor** (in the tail)

After calving, it is **checked if the uterus is in place**

One month later, mothers + calves are moved in a digestate-bedded pens with bulls

Lacting calves have a narrow passageway with feed and are weighed at 90, 120, and 270 d.

Calving interval 392 d (National average 410 days) and **700 calvings/year**

Calves' mortality from birth to 7 mos: **7%** (**1% during calving**)

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Suckler-fattening farm without unproductive females

All females are mated and after calving

breeding fattening

Females inseminated before grassing (end of March)

- **Test all the females** before making a choice
- **Renewal rate 35%** (≈ 20% France)
- Cull cows < 6 years (**not penalized price** of carcasses)

Calving interval < 370 d (National average 400 days)

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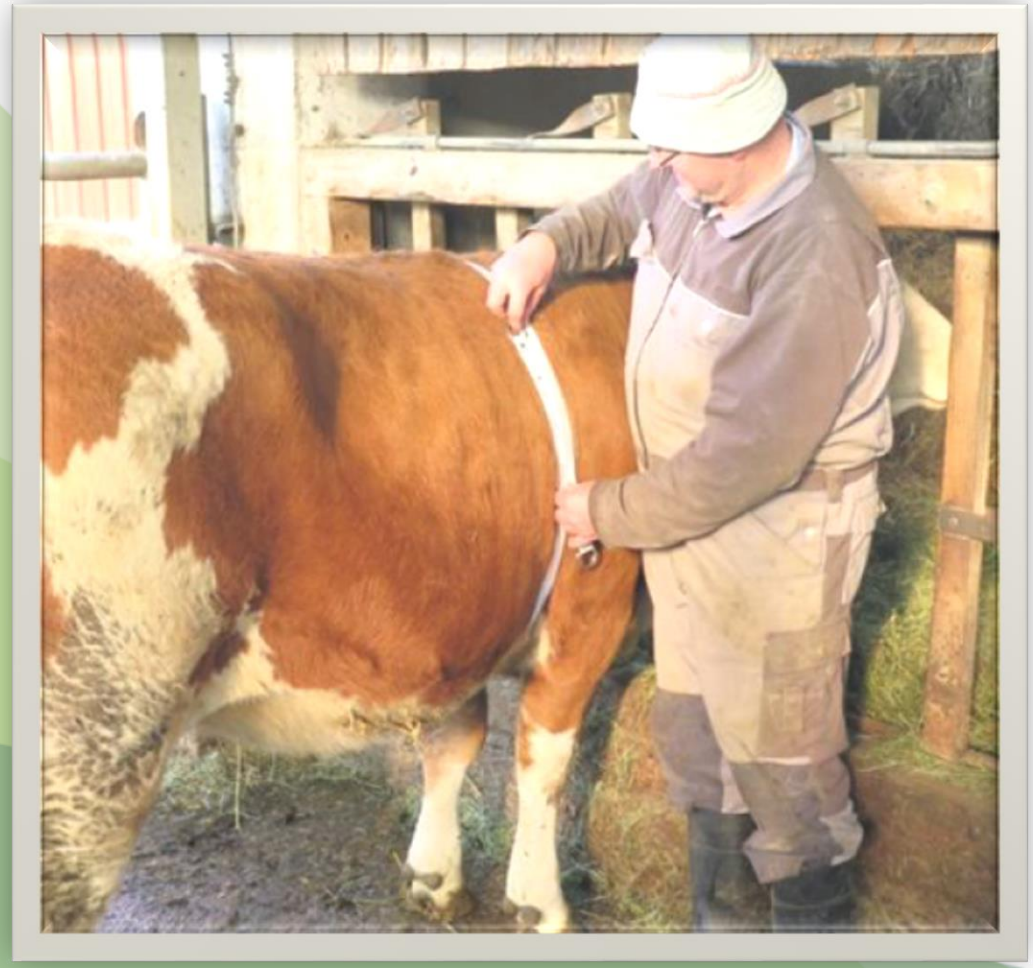
Using a measuring tape for timing the first mating



First mating:

- Early → health problems in calves and cows
- Late → low production efficiency
- Right timing → long and productive life

Depends on age, live-weight and physical maturity

Tape measure for the thoracic circumference to predict the weight (breed)

Target: to mate when the heifer reaches ≈ 60% LW

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Priority topic

Solution

Tools to evaluate the carcass and meat quality prior to and in the slaughterhouse

- **Mapping of intramuscular marbling of carcasses**
- **Meat@ppli – a smartphone application to predict marbling and rib fat**
- **Meat quality prediction by in vivo ultrasound analysis**

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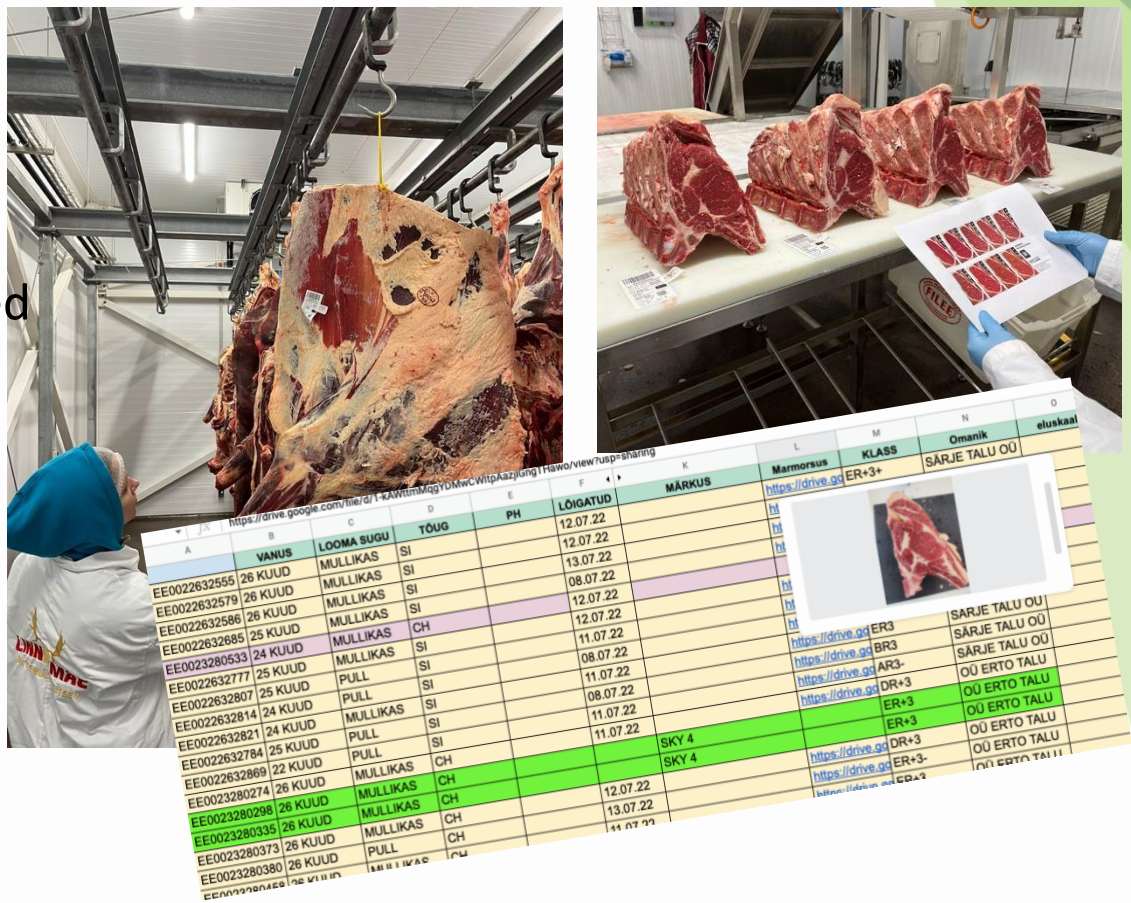
Mapping of beef marbling - Feedback to farmers

- From May 2022 in Estonia
- Carcasses with a fat cover ≥ 2 and above
- The loin is photographed at 12-13 ribs
- Australian Ausmeat grading system
- Feedback within 1 mo. of the animals being slaughtered
- Potential to produce high-marbled meat for marketing strategies
- The mapping is free of cost for the farmer



We know that customers and consumers want marbled meat. I would make changes in the animal's management to produce more marbled meat from grasslands

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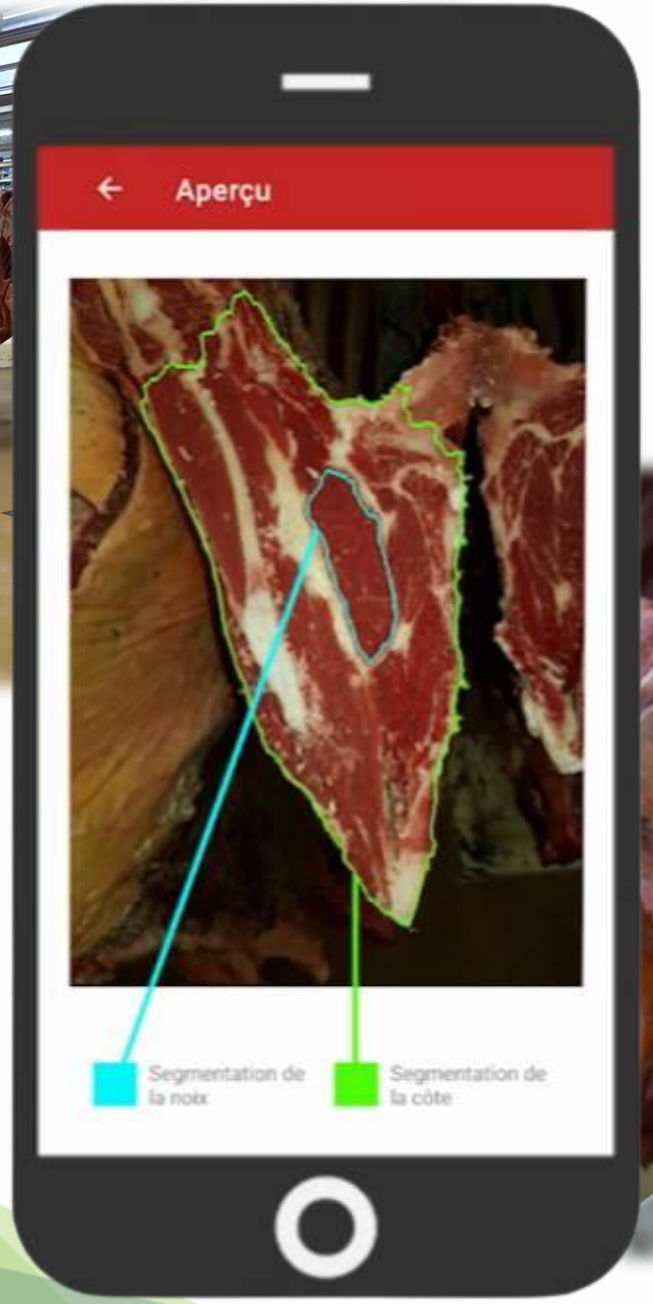

meat@ppli

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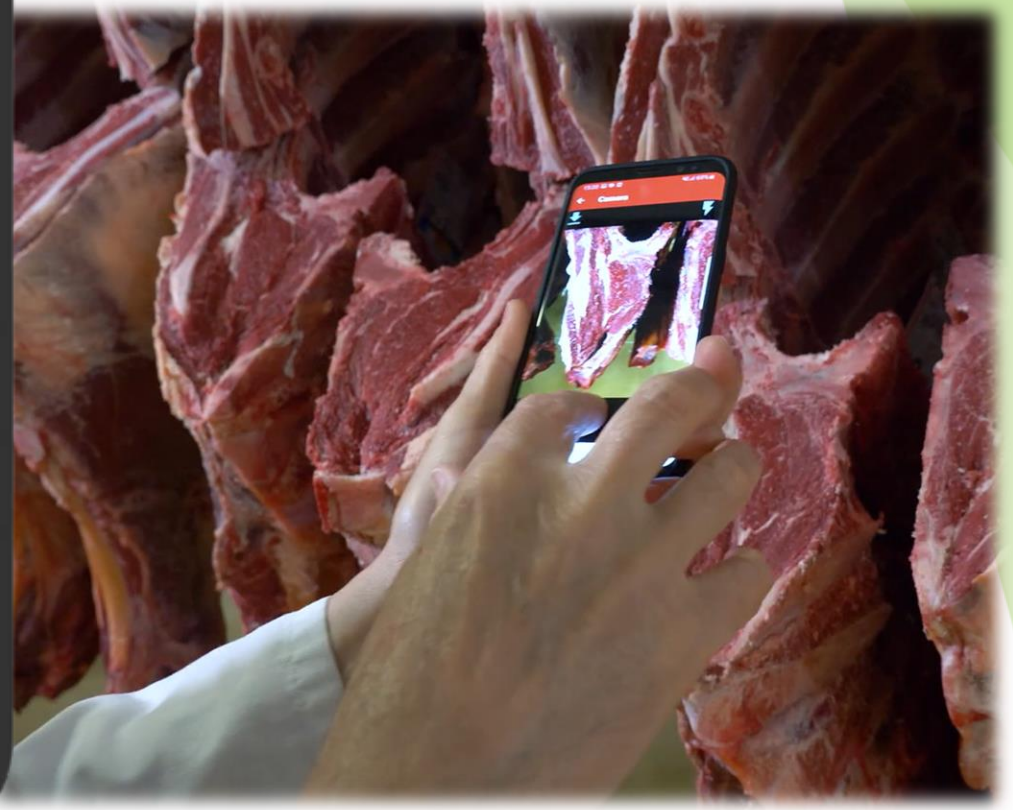

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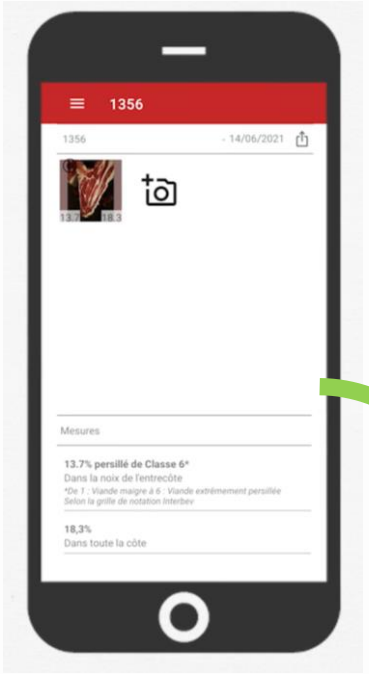

POURCENTAGE DE GRAS
INTRAMUSCULAIRE

GRILLE DE NOTATION INTERBEV
EN 6 CLASSES

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Meat quality prediction by *in vivo* ultrasound analysis

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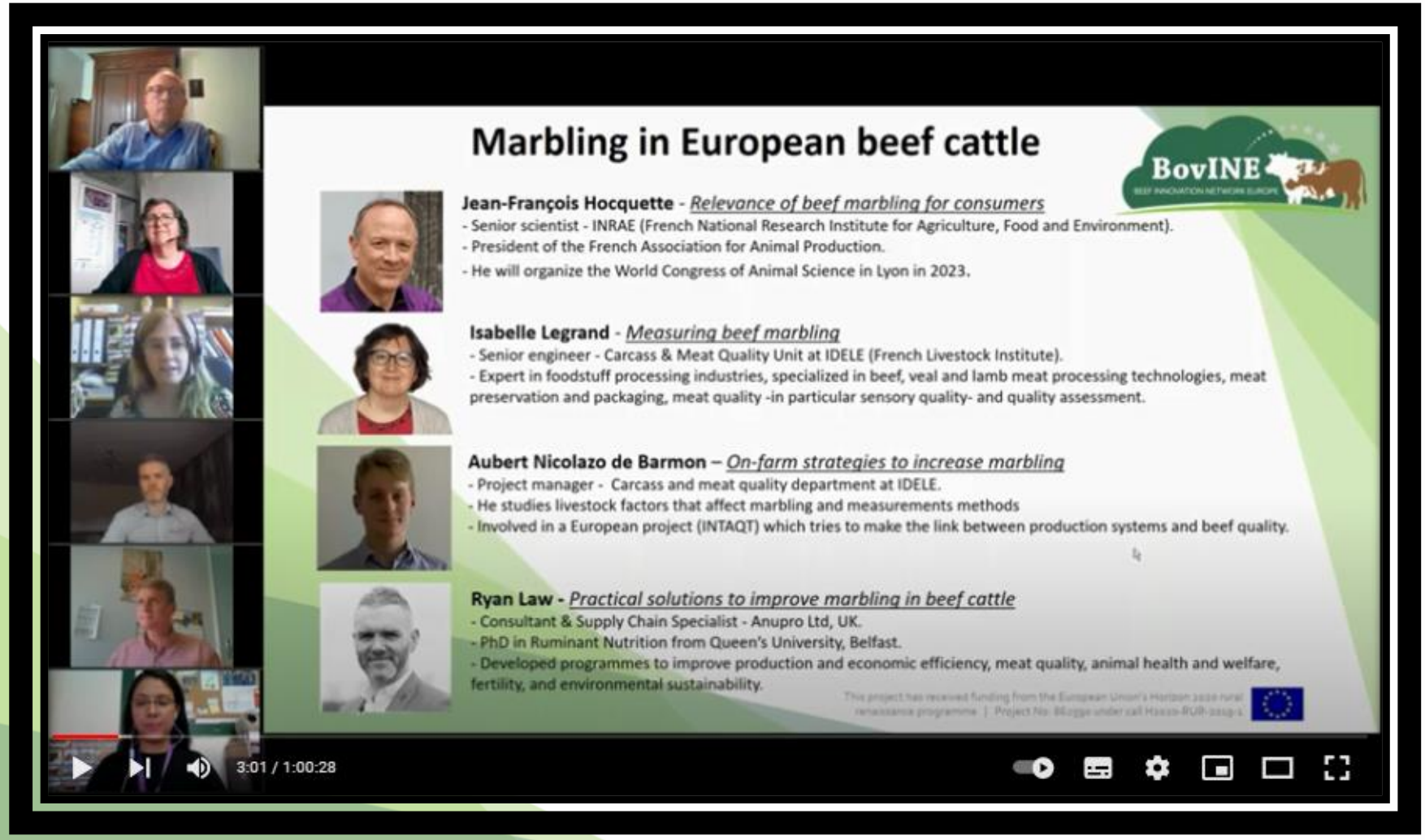

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Priority topic

Solution

On-farm strategies to increase/improve marbling/tenderness/colour in beef meat

The use of MEAT + sires in Belgian Blue

Neogen genetic test to increase beef marbling

Finishing diets for better carcass and meat quality

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The use of MEAT + sires in Belgian Blue

- Genetic test combining **DNA- analyses** with **observations of carcasses** in slaughterhouses and cutting plants
- Animals with higher **guarantee of tenderness** for some cuts of meat
- About 70% of the animals are already Meat+. Belgian Blue studbooks have decided to reach 100%.

Every beef farmer knows now which breeding bulls are Meat + and will chose these bulls. For the future of the breed, it is very important knowledge.

UNIVERSITEIT GENT

Université de Liège

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Neogen genetic test

Increasingly, there are more and more pedigree bull buyers who are aiming to get marble meat from grassland. The ***Neogen genetic test provides some assurance*** *of this, along with monitoring of other traits.*

*"**It's a fantastic tool to rank cattle.** Makes it a lot easier to decide if a nice looking heifer is going to stay on the farm or if it hasn't got the genomic precondition. **We don't decide a 100 % by genomics**, the phenotype also has to be functional to ensure a long life at our farm. Still, we don't want to miss it anymore."*

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Finishing diets for better carcass and meat quality

Increase in energy content (2-4 mo. before slaughter):

- Charolaise, male: + 1 kg corn meal
- Charolaise, female: - 1 kg corn silage, + 2,5 kg of corn meal
- Limousine, female: + 2 kg corn meal (none in growth)
- Italian crossbreds, female/male: + 1 kg corn meal

Straw, protein (soy meal or industrial mix), soluble fiber (bran, beet pulps…) and vitamin and minerals

*It is a practice that many of us have to apply, especially those with beef bulls or with **breeds that have difficulty to deposit fat** in their body. It's challenging for it takes **more work** (more than one diet according to different groups of animals) and **expensive**, for energy to deposit fat comes from cereals or fatty supplements, but it's the **only way to meet market success***

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MOO - CHAS GRASS - IAS

Virginia C. Resconi
resconi@unizar.es

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Tackling Environmental Sustainability on Beef Farms

Riet Desmet

EV-ILVO

Belgium

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Tools for evaluating and improving the ecological sustainability

This project has received funding from the European Union's Horizon 2020 rural renaissance programme | Project No: 862590 under call H2020-RUR-2019-15

Year 3

CO²

Tools for evaluating and improving the ecological sustainability

BovINE
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RIIKLIKULT TUNNUSTATUD ROHUMAAVEISE LIHA
STATE CERTIFIED GRASS-FED BEEF

KRINGLOOP WIJZER

Carbon Farming

CFT
COOL FARM TOOL

Belbeef. Gegarandeerd goed gesoigneerd.
Guaranteed by Belbeef.

KLIMREK

CAP'2ER®

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Solutions to decrease the carbon footprint on farm

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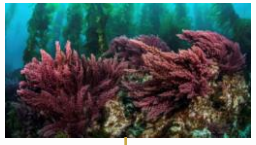
Year 1

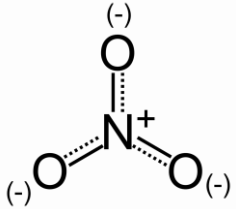
1. Strategies to reduce enteric emissions

Feed Management

Feed ingredients



Additives



Bovaer®

Feed						
Reduction potential	9 %	8 %	40 % Or even more	? %	8 %	15 %

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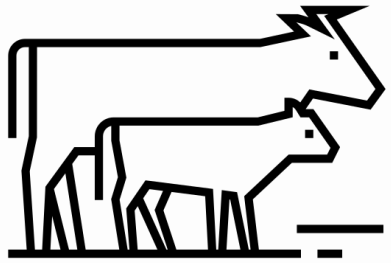
Year 1

1. Strategies to reduce enteric emissions

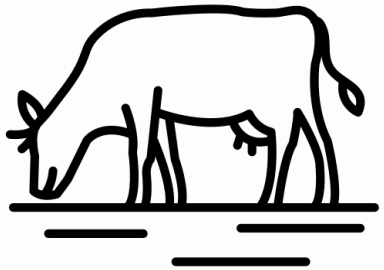
Farm Management

Genetic selection

Youngstock rearing



Production systems



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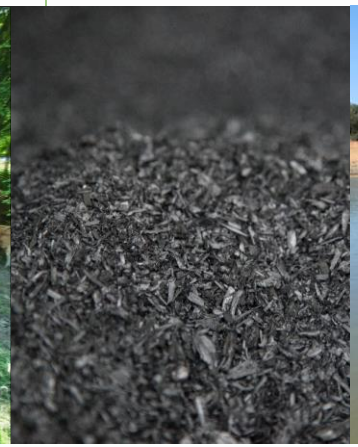
Year 2

2. C-sequestration

- Hedgerows, silvopasture
- Additives
  like biochar/organic waste to promote humus in the soil
- Management
  Holistic management
  Permanent grassland
  Bale grazing





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Year 3 CO²

3. Methods to improve biodiversity without major investments

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BIOSTIMULANTS

= a natural product to improve the growth and strength of plants

Stam-Agro and Ugent → Chicken feathers

High in protein, showed great potential in trials

Together with conventional fertiliser (70%)

Less N and lower CO2

Ongoing project

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Year 1

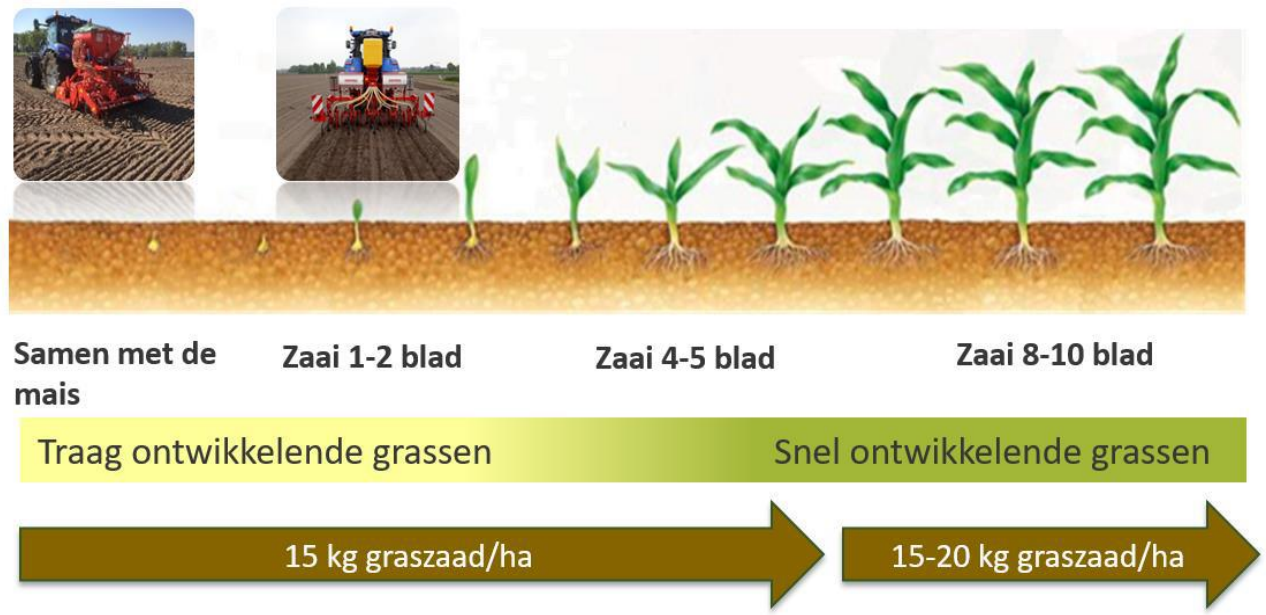
4. Reduction of nutrient leaching to improve the quality of surface water

GREEN COVER CROPS IN MAIZE

Late harvest maize → problems cover crops

Many advantages

Sow simultaneously with maize, or 2nd to 10th leaf stage



nion's Horizon 2020 rural call H2020-RUR-2019-15

Year 1

4. Reduction of nutrient leaching to improve the quality of surface water

Pros

- Sowing in 4th-5th leaf stadium increased maize production
- Lower NO3 residue

Cons

- Reduced to a grassy green cover
- No maize residue can be worked under

! To achieve a successful green cover crop that does not affect maize yield too much, many factors are important, like variety choice, sowing timing and weed control. !

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Year 1

CO²

4. Reduction of nutrient leaching to improve the quality of surface water

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Reward systems for ecological measures

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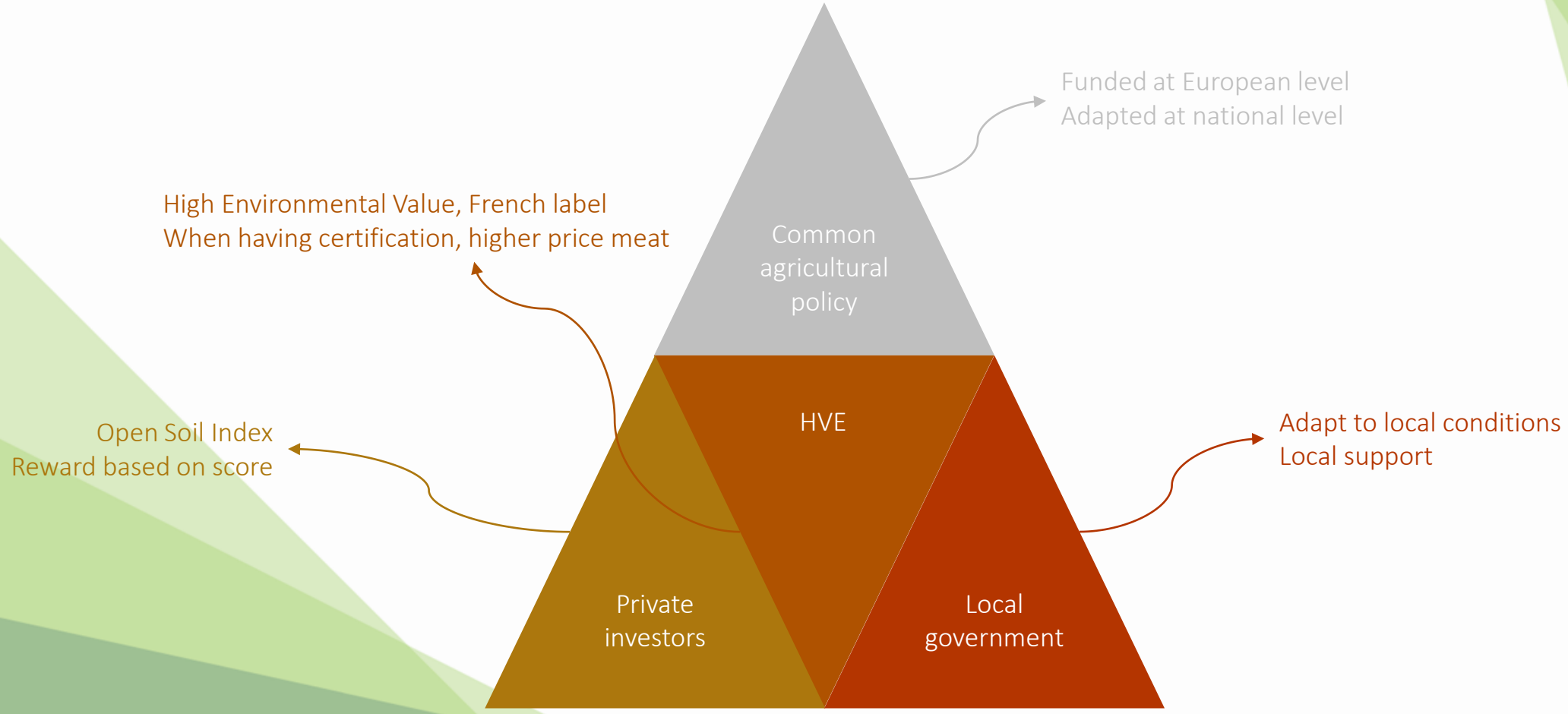
Year 2

Reward schemes for farmers meeting environmental deliverables



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Thank you!

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BovINE Resources
to Support Beef Farming Sustainability

Rhonda Smith, Minerva UK

BovINE Lead: Communications, Dissemination & Capacity Development

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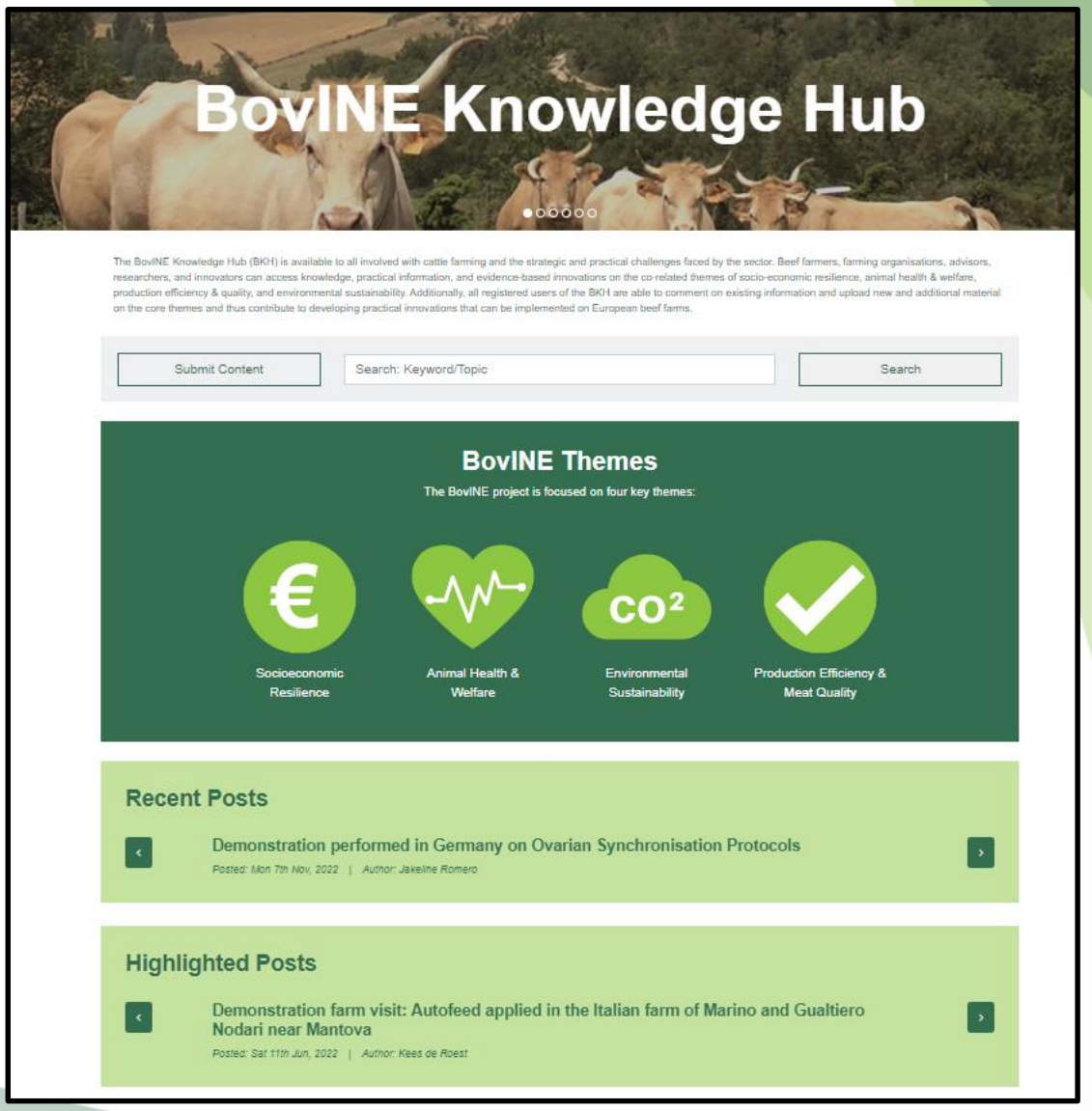
BovINE Knowledge Hub (BKH)
https://hub.bovine-eu.net/

- 400+ posts
  - 340 separate practices/solutions
  - 96 submitted to EIP-Agri highlighted
- Access open to all
- Register to comment and/or submit content
- Search facility – key words
- Organised by 4 themes
- Limited multi-lingual material
- Translate copy via browser



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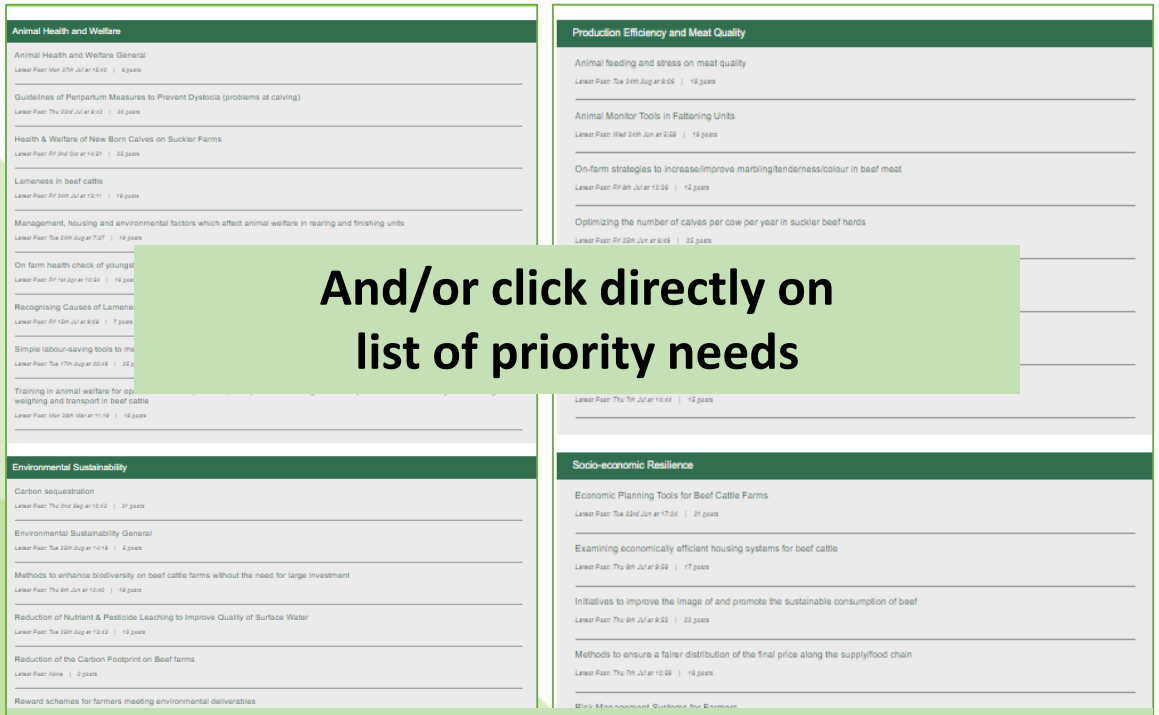
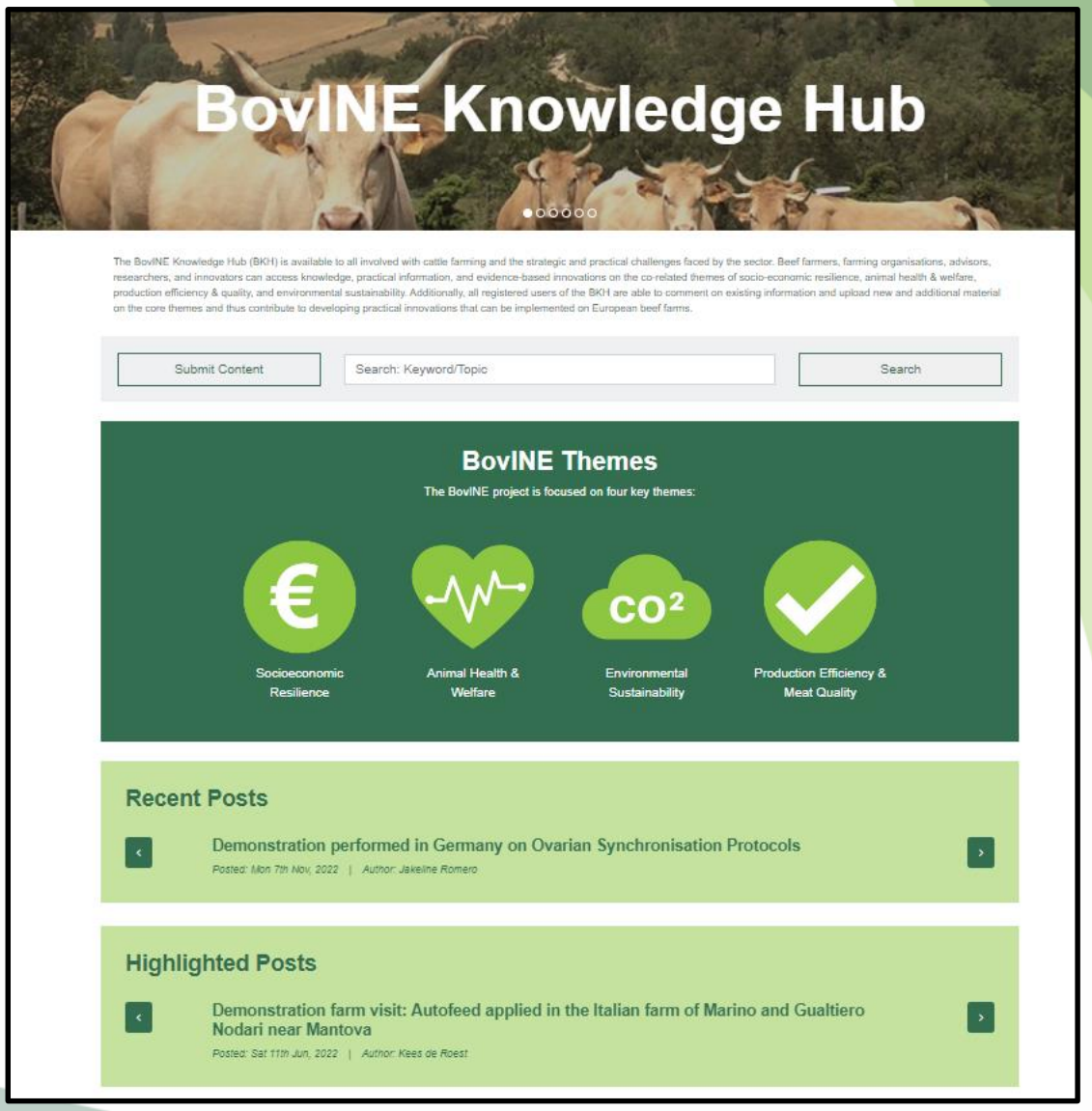


And/or click directly on list of priority needs

Users to date: 3,497

Average no. of pages viewed: 6.3 pages

Average time on site: 5:42 mins



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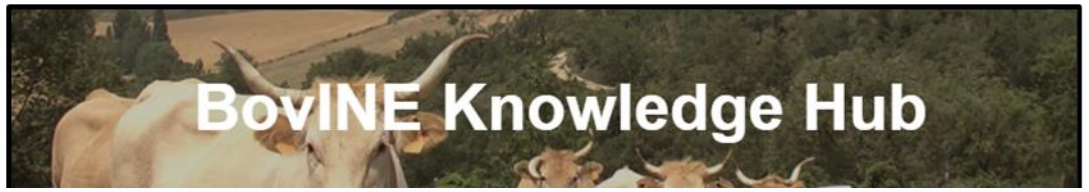

Examples of (BKH) posts

On-farm demonstration on Gently touching of calves

Fri 28th Oct, 2022 | Jakeline Romero | meat quality | tactile stimulation | Early handling | Content Type: Other

Author: Anna Lena Lindau – BRS (*L.Lindau@rind-schwein.de*)

The method of gentle touching of calves was performed on a suckler beef farm in Germany. The calves were born on a suckler beef farm breeding Simmenthal cows in the eastern part of North Rhine Westfalia. The farmer has approximately 30 cows with their calves. The owner was instructed by the researcher Anna Lena (from BRS) to carry out the touching of the calf according to the to the instructions published on the Bovine Knowledge Hub - Gently touching of beef calv... at the abattoir.

A video with the instructions was recorded and can be seen below.

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Knowledge Hub / Animal Health and Welfare General / Animal welfare guideline for animal husbandry of fattening bulls and suckler cows in Lower Saxony

Animal welfare guideline for animal husbandry of fattening bulls and suckler cows in Lower Saxony

Tue 19th Jan, 2021 | Karin von Deylen | flooring | fattening bulls | space allowance | Content Type: Guidelines

Today's animal husbandry has to meet many requirements - consumer acceptance, animal welfare and environmental sustainability. Under these requirements concrete slats don't look sustainable. However what about cost-efficient production while meeting these requirements?

To establish higher minimum welfare standards for keeping beef cattle in Lower Saxony, an animal welfare guideline has been established. This is intended to provide support in the animal welfare assessment of new buildings and conversions. The joint effort of public authorities, agriculture and animal welfare organisations formulates the first specific animal welfare requirements for beef cattle in Germany as a consensus paper. Kathrin Herzog from Lower Saxony State Office for Consumer Protection and Food Safety describes the animal welfare guideline in the attached document. First experience from practice show that improved housing conditions, which are oriented towards the needs of fattening cattle do not compete to economic livestock husbandry.

Niedersächsisches Landesamt für Verbraucherschutz und Lebensmittelsicherheit

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Knowledge Hub / Economic Planning Tools for Beef Cattle Farms / Beef cost: an app for beef cattle farmers to calculate production costs

Beef cost: an app for beef cattle farmers to calculate production costs

Mon 12th Sep, 2022 | Kees de Roest | Content Type: Good Practice

Introduction to the challenge addressed

Unicarve in collaboration with the private feed mix producer Trouw Nutrition and CRPA, the Research Centre on Animal Production, worked on the creation of an application for smartphone or personal computer, to calculate the cost of production their activity, through the elaboration of data inserted by each operator in the app. The app is made available to all cattle farmers who have made a request for using it.

Description of Innovation

Accessing a software that works on smartphones or PC, farmers can input several data related to the characteristics of their management in the production of beef animals. The data concern economic parameters (mortgages, labour costs…), feeding costs, management of animals (veterinary, rearing materials such as straw for bedding…), animal characteristics (genetic type, gender, weight at arrival and planned at end of cycle). When all data are inserted, the app produces the results of the economic efficiency of the farmers' activity.

Impact on farm performance

Many famers don't have a software to monitor production parameters and this tool is easily accessible, even without the need of a PC. Monitoring of the costs of production of the farm activity can evidence weaknesses of the production system, excess of expenses in some area of the management and gives the possibility to make choices for improvements. It is a tool with allows to understand if the farm is well performing

Farm Carbon Calculator

Tue 25th Oct, 2022 | José Pais | Carbon emissions | Carbon footprint | Content Type: Good Practice

Introduction to the challenge addressed

Farming systems produce greenhouse gas (GHG) emissions, primarily in the form of methane (mostly caused by animal digestion and respiration) and nitrous oxide. Trees, plants, grasses and soils take up carbon dioxide from the atmosphere and use it to grow.

The Emissions Trading System is a major tool of the European Union in its efforts to meet emissions reductions targets now and into the future. The trading approach helps to combat climate change in a cost-effective and economically efficient manner.

Farmers in general and particularly livestock farmers are part of the system and it is important to have tools to monitor and calculate the carbon balance of their farm.

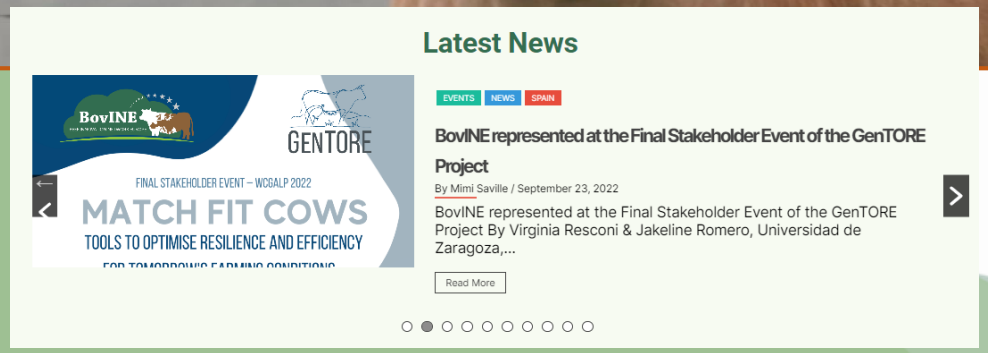
Description of Good Practice

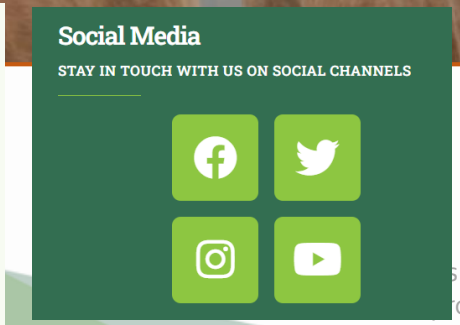
Globally there are several tools to calculate the carbon balance of farms and some even work online. Farm Carbon Calculator is an online tool, with 1, 2 and 3 scopes, meaning it is comprehensive and covers direct and indirect emissions. In IPCC Livestock calculations it covers Tiers 1 and 2. Tier 1 is the basic method, frequently utilizing IPCC recommended country-level defaults, while Tier's 2 and 3 are each more demanding in terms of complexity and data requirements. With this wider scope the Farm Carbon Calculator is far more comprehensive and accurate for the user. The Calculator can be used by farmers and growers with livestock, arable, horticulture, etc. This includes farms on any scale, soil type or place in the UK. Using this tool requires a lot of organized information about the farm that must be uploaded to the platform, which can take some time to start up. Once the farmer has the necessary data, filling it in is straight forward, between around 30 mins and 2 hours. The Farm Carbon Calculator is free for all farmers and growers who are not using it for directly profitable purposes. Each farm needs to enter data its business, and through the Calculator will convert this in to a carbon footprint. To be able to do this the farmer has the support of a video and an instruction manual. There is the need for details about the following areas of each farm:

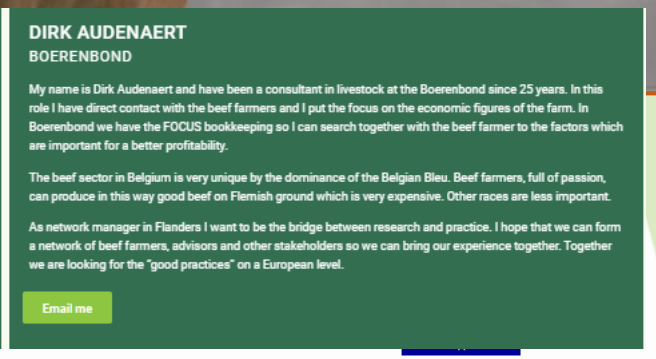
- Fuels, electricity and business travel;
- Materials, machinery and buildings;
- Cropping and fertility;
- Livestock;
- Inputs (fertilisers and sprays);
- Waste and recycling;
- Distribution;
  - Carbon sequestration in soils and biomass.

This project has received funding from the European Union's Horizon 2020 rural renaissance programme | Project No: 862590 under call H2020-RUR-2019-15

BovINE Project website https://www.bovine- eu.net/







BovINE Project website https://www.bovine-eu.net/

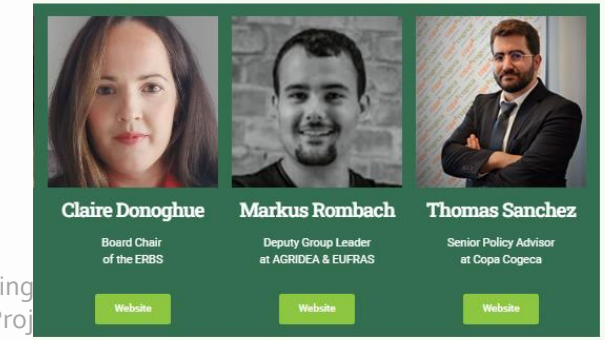
- **9 country pages**

Links to

- **12 webinars**
- **8 animations**
- **BovINE videos (meetings etc) hosted on YouTube**

- **Themes & priority topics**

- **Linked projects**
- **Advisory Board**



This project has received funding
renaissance programme | Proj

BovINE – multi-language materials (website)

- 9 dedicated country pages
- Local language materials
- Accessed via flags on home page

BovINE Tijdschrift: Duurzaamheid en rundveehouderij in België

BovINE heeft een tijdschrift uitgebracht over de rundveehouderij en duurzaamheid in België. Lees over de toestand van de rundveehouderij en de praktische oplossingen die het BovINE-project gedurende het 3 jaar durende project heeft nagestreefd.

Gebruik de knoppen onderaan het scherm om in te zoomen of het tijdschrift in een volledig scherm te openen.

Just published! Dedicated country magazines

BovINE - Beef Innovation Network Europe

BovINE verenigt een consortium van 18 organisaties uit 10 Europese landen. Het gevarieerde consortium bestaat uit onderzoeksorganisaties,

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renaissance programme | Project No: 862590 under call H2020-RUR-2019-15

BovINE – multi-language materials (website)

- 9 dedicated country pages
- Local language materials
- Accessed via flags on home page

Improving the sustainability of your beef farm: lessons from across Europe

Irish BovINE Beef Meeting

New innovations for beef farmers such as the use of agro forestry in organic farming, health protocols on Italian beef finishing farms and beef price transparency were just some of the key issues presented and discussed by the BovINE project at the Irish Network meeting held on-line on 25th October. The meeting was attended by over 90 farmers and other stakeholders.

CASCINA CA' D'OLMO
PIEDMONT, ITALY

Improving the sustainability of your beef farm through lessons learned from across Europe was the theme of the meeting which was organised by the Irish BovINE partners, the IFA and Teagasc.

Dr Maeve Henchion and Dr Richard Lynch from Teagasc made a presentation on the work and results of the BovINE project over the last 3 years, highlighting the project's output. This information is available on the online repository - the BovINE Knowledge Hub which can be found on the Bovine web site at https://www.bovine-eu.net/

Pearse Kelly, Teagasc Head of Drystock gave a very interesting presentation on the importance of innovation on beef farms, highlighting the increased uptake by beef farmers in recent years of technologies such as genotyping and LESS (Low emission slurry spreading).

Clive Bright, an Irish organic beef farmer from Ballymote, County Sligo gave an overview of his 100% grass-fed beef production system. Clive explained how his farm doesn't use any imported feeds or fertilisers yet it manages to remain consistently profitable. He gave a detailed account of his stewardship and holistic management approach to his land and suckler cow herd, and how he has integrated agro-forestry as part of his system.

Buyers of Irish weanlings, Italian brothers, Alessandro and Paolo Vigna, told their story of finishing Irish born cattle in Italy. The Vigna family Group are one of the largest beef finishers in Italy, rearing and finishing over 20,000 cattle annually on four farms. Alessandro and Paolo along with their veterinary surgeon described the evolution of their business and explained how a strong animal health and welfare strategy enabled them to

Reports on 2022 National Network Meetings

n's Horizon 2020 rural renaissance programme | Project No: 862590 under call H2020-RUR-2019-15

BovINE Multi-language materials (website)

- 9 dedicated country pages
- Local language materials
- Accessed via flags on home page

Contact details & information about National Network Managers – keep in touch!

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BovINE Multi-language magazines

- 9 language versions
- Available on web pages
- 4 pages each issue
- Copies to be utilised at meetings into 2023

This project has received funding from the European Union's Horizon 2020 rural renaissance programme | Project No: 862590 under call H2020-RUR-2019-15

BovINE Multi-Language Bitesize Cards

BovINE Bite-Size - Ireland

BovINE Bite-Size
Ireland

Measuring Colostrum Quality

The health of calves in the first three months of life is based on passive immunity, which they achieve by taking in sufficient colostrum. However, the quality of colostrum can vary greatly, which in turn determines the amount of colostrum a calf needs. The quality of the colostrum is measured by the amount of immunoglobulins present.

It is recommended that new-born calves ingest 200 mg in the first day after birth in order to receive sufficient passive immunity. Therefore by measuring immunoglobulins in collected colostrum a farmer can determine how many litres of colostrum a calf needs in the first day.

To do this a farmer can take a sample of the colostrum and measure its quality using a simple device known as a refractometer. It is suggested to measure colostrum from a proportion of the herd each year to get an overview of the colostrum quality within the herd as a whole. In doing this farmers can optimize feeding, nutritional supply and immune status of the cows to enhance passive immunity.

Virtual Fencing: improving farm sustainability

Virtual fencing is a new technology on beef farms that can aid the implementation of good levels of grassland management.

It involves the placing of a GPS neck collar on a grazing animal and the creation of a virtual perimeter on your farm using GPS mapping software via your smartphone or tablet.

Recent on farm trials have demonstrated that animals easily adapt to this system when changed from conventional fenced paddocks.

This technology has the potential to improve livestock and pasture management and reduce labour and costs associated with erecting and maintaining physical fences. Furthermore, it can also detect individual inactivity, which may be related to health issues. Therefore, its introduction can positively impact three areas of farm sustainability; economic resilience, animal health & welfare and production efficiency.

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BovINE Bite-Size - Ireland

BovINE Bite-Size
Ireland

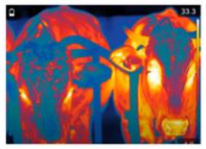
Environmental Sustainability: reward label for beef products

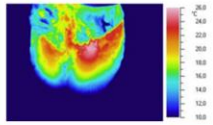
The French Agricultural Ministry has implemented a scheme which enables products originating from suitably certified beef farms to be differentially labelled at retail. The label known as 'Haute Valeur Environnmentale' (High Environmental Value) is the highest level of certification awarded to farms participating in the 'Farm Environmental Certification Scheme'. Beef farmers can achieve this label by implementing key actions in the areas of biodiversity, conservation, crop protection strategies, management of fertiliser use and use of water.

Certification offers farmers several advantages:

- Products stand out in retail: A statement *'From farms certified as having high environmental value'* is attached to the product to set it apart from its competitors.
- It enables farmers to communicate about their good practices
- It shows farmer recognition for the demands of consumers
- It offers increased prospects of access to new markets and increased sales.

Infrared Thermography: improving animal health and welfare on beef farms





Infrared thermography is a non-invasive technology that can be applied on beef farms for the detection of a number of animal health related matters such as:

- Detection of lameness
- Onset of calving
- High temperatures due to fevers and/or digestive disorders

With infrared thermography it is possible to diagnose a specific illness before the effects become clinical, thereby reducing the costs associated with treatment. Thermal imaging cameras are now relatively low cost and easy to use. Imaging works best when the camera is a maximum of 2m distance to the animal with a free field of view.

There are many other uses for infrared thermography on the farm including checking for bad ensiling, leak detection and fill levels of over-ground tanks.

For further information on this and other useful innovations please visit the BovINE Knowledge Hub at: hub.bovine-eu.net

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English & local languages
Top choices

- **Each country**
- **Each BovINE theme**

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BovINE Bitesize Cards

BovINE BEEF INNOVATION NETWORK EUROPE

BovINE Bite-Size - Eesti

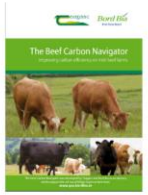
BovINE Bite-Size
Eesti

Beef Carbon Navigator

Tarbijad, jaeketid ja restoranide kliendid nõuavad jätkusuutlikke toiduainete tootmissüsteeme ning ühtlasi ka seda, et farmerid peavad suutma jätkusuutlikkuse väiteid faktide ja arvudega toetada ning tõestada.

Bord Bia töötas koos Teagasciga 2012. aastal välja Carbon Navigator'i. See võimaldab farmeritel registreerida oma põllumajandusettevõtte jätkusuutlikkuse tulemusi ja neile juurde pääseda ning mõõta ja võrrelda aja jooksul toimunud parandusi.

- Pikem karjatamisperiood
- Madalam esmapoegimisiga
- Suurem poegimismäär
- Parem kasvukiirus
- Tõhusam lämmastiku kasutamine
- Parem sõnnikukäitlus



Andmeid kogutakse ja neid saab kasutada Bord Bia andmebaasis, mis koostab farmi tulemuslikkuse aruande.

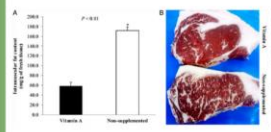
Carbon Navigator saab hinnata, mitme % ulatuses vähenevad KHG heitkogused erinevate meetmete tulemusel ja kui suur on nendega seotud majanduslik kasu, näiteks 40 lehma karja puhul suurendab poegimismäära parandamine 5% võrra kasumlikkust 1720 euro võrra ja vähendab kasvuhoonegaaside heitkoguseid 4% võrra.

A-vitamiini mõju veiseliha marmorusele

A-vitamiin on rasvlahustuv retinool, mis mõjutab nägemist ja loote arengut, eriti embrüonaalse arengu ajal, mil rakkudel, kudedel ja elunditel kujunevad välja spetsiifilised tunnused ja ülesanded.

A-vitamiini puudus pärsib loomade tervist ja jõudlust, samuti mõjutab vitamiin ka liha marmoristumist. Toimemehhanismid on keerulised, varajases staadiumis suurendab A-vitamiin rasvarakkude kasvu ja nuumamisperioodil jällegi vähendab.

Hiljutises Brasiiliast pärit uuringus kasvatati kastraate (50% Wagyu, 25% Angus, 25% Nellore) grupis, võõrutati 8 kuu vanuselt ja nuumati 320 päeva jooksul söödaplatsil ühega kahest söötmissüsteemist : A-vitamiini lisamisega 99 900 IU/kg mineraalsegu (n = 10) või 2) ilma A-vitamiini lisamiseta (n = 10). Näiteks anguse ristandiga härgadel, keda toideti madala A-vitamiinisisaldusega, oli 16% suurem marmoriseerumise skoor kui kontrollsöödal.



Kuna uute rasvarakkude moodustumine on aktiivsem rakkude kasvu staadiumis, siis A-vitamiini manustamine selles faasis suurendaks lihasesisest adipogeneesi ja marmoristumist.

Teine Koreas läbi viidud uuring näitas, et A-vitamiini suukaudne lisamine varases kasvuperioodis, alates 5. päevast kuni võõrutamiseni kahe kuu vanuselt, võib edendada marmoriseerumise arengut Hanwoo vasikatel.

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a-Corona vaktsineerimine veiste puhul

raktika näitena Saksa farmist. Vasikad sünnivad tervena ja ilma abita (välja d väga harva esinevad üksikjuhtumid). Pärast 2-5 päeva möödumist tavad vasikad raske kõhulahtisuse all. Umbes kaks kolmandikku vasikatest d saama infusiooniga, et ravida dehüdratsiooni, atsidoosi ja elektrolüütide st, mõnda neist tuli ravida korduvalt

äsja haigestunud vasikat testiti kiirtestiga, mis näitas vseid tulemusi kas rotaviiruse või koroonaviiruse või na suhtes. Maikuus pandi pull karja. Kolme kuu pärast lliti lehmi tiinust. Kui tulemus oli positiivne, jäid nad koosseisu. Kui tulemus oli negatiivne, eraldati lehm karjast rühma.

lehmad, kelle tulemus esimesel kontrollimisel oli vne, vaktsineeriti detsembri keskel Rota- ja aviiruse vastu. Oluline on, et vaktsineerimine toimuks nädalat kuni kolm kuud enne poegimist. Nii atakse ternespiimas piisav kontsentratsioon spetsiifilisi hi viiruste vastu.Seda head tava järgides suutis majandustootja vähendada Rota- või koronaviiruse statud kõhulahtisuse juhtumeid peaaegu nullini.

akultuurisüsteemid

ltuuride kasvatamine samaaegselt samal maal on huvitav viis dada bioloogilist mitmekesisust põllumaadel ja külvikordades.

atesse rühmadesse kuuluvad liigid peaksid üksteist paremini täiendama, kuid ahe erineva rohuliigi koos kasvatamine mõjutab saagikust positiivselt. Kaunvilju takse segaviljeluses, sest neil on N-fikseerivad omadused, mis mõjutavad kasvu. sellele on toitevääritus/söödavääritus parem.

Karjaloomade söödaks, nii silo kui ka karjatamiseks, võib olla timut, karjamaa raihein, roog aruhein, harilik aruhein kombineerituna aruraiheina, punase või valge ristikuga. Teravilja (odra, tritikale, nisu, kaera või maisi) toorvalgusisalduse, valgusisalduse ja suhtelise söödaväärtuse suurendamiseks võib põllule lisada herneid.

Hea rakendamise korral võib segakultuuride kasvatamine parandada põllukultuuride jätkusuutlikkust, tootlikkust ja saagikust.

Segakultuuride puhul esineb vähem umbrohtu. Selle tulemuseks on väiksem umbrohtude osakaal saagis (10-60% ainukeste kultuuride puhul võrreldes <5% segakultuuride puhul).

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Modyfikacja diety końcowej: poprawa jakości tuszy i mięsa

W ostatnich miesiącach opasu hodowcy, korzystając z porad żywieniowców, dokonują modyfikacji planów żywieniowych bydła w celu spełnienia wymagań rynku. Modyfikacje te koncentrują się na zwiększeniu ilości energii i zmniejszeniu ilości pasz objętościowych, takich jak kiszonka z kukurydzy.

Przykłady modyfikacji w zależności od różnych typów zwierząt:

Charolaise
- (M): zwiększenie o 1 kg ilości mączki kukurydzianej
- (F): zmniejszenie ilości 1 kg kiszonki kukurydzianej, zwiększenie ilości 2,5 kg mączki kukurydzianej.

Limousine
- (F): brak stosowania mączki kukurydzianej w fazie wzrostu, ale włączenie 2 kg w fazie tuczu.

Italian crossbreds
- (F): zwiększenie o 1 kg ilości mączki kukurydzianej
- (M): zwiększenie o 1 kg mączki kukurydzianej

Pozostała część diety zazwyczaj nie ulega zmianie, składając się głównie ze słomy, źródła białka (mączka sojowa lub mieszanka przemysłowa), źródła rozpuszczalnego włókna (otręby, wysłodki buraczane...) oraz suplementacji witaminami i mineralami.

Ocena witalności u nowonarodzonych cieląt

Podejmowano różne próby opracowania systemu oceny żywotności u nowo narodzonych cieląt, ale jak dotąd nie udało się uzyskać jednolitego wyniku.

Proponowane parametry oceny żywotności u nowonarodzonych cieląt mlecznych to na przykład: oddychanie, wygląd okrywy włosowej, brak obrzęków obwodowych, błony śluzowe, reakcja na stymulację odruchową, napięcie mięśniowe, tętno, temperatura w odbycie, pozycja leżąca na mostku, próby wstawania, ssanie.

Istnieją parametry, które można ocenić bez dotykania cielęcia i dlatego nadają się dla wszystkich rodzajów bydła i hodowli.

Czas do podniesienia głowy powinien wynosić trzy minuty, rekonizacja mostka powinna być osiągnięta pięć minut po urodzeniu, a po 20 minutach powinny być pierwsze próby wstawania.

Godzinę do 90 minut po urodzeniu cielę powinno być w stanie spontanicznie stanąć, a co najmniej cztery godziny po urodzeniu cielę powinno zacząć ssać.

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Marketing bezpośredni online: skupiony na zrównoważonym rozwoju i dobrostanie zwierząt

Grutto, firma z Bawarii (południowe Niemcy), podjęła decyzję o uboju zwierzęcia tylko wtedy, gdy wszystkie jego elementy wołowe są już sprzedane - "Od pyska do ogona". Proces ten jest realizowany poprzez umożliwienie klientom składania zamówień online na różne części mięsa. Sprzedawanie w ten sposób całego zwierzęcia zapobiega marnotrawstwu.

Jeśli sprzedaje się całe zwierzę, jest ono ubijane w małych, wybranych rzeźniach w pobliżu, aby zmniejszyć stres, a poszczególne części mięsa są odpowiednio przygotowywane. Każde zamówienie jest dostarczane.

Klienci mogą zamawiać online różne produkty, w tym kawałki mięsa i produkty przetworzone, takie jak kiełbasy. Zapewnia to bardzo zrównoważoną produkcję mięsa i produktów mięsnych, ponieważ wszystkie części zwierzęcia mogą być wykorzystane.

Ponieważ w tym procesie nie ma potrzeby korzystania z pośredników, proces ten zapewnia uczciwą cenę dla konsumentów i rolników, a konsumenci mają dodatkową korzyść w postaci 100% przejrzystości - wiedzą dokładnie, który rolnik wyhodował zwierzę, od której otrzymują mięso.

Biochar: wpływ na sekwestrację węgla

Biochar ma pozytywny wpływ na wzrost roślin, zmniejszenie wymywania składników odżywczych, większą retencję wody i poprawę aktywności mikrobiologicznej. Podczas gdy niektóre badania wykazały wzrost nadziemnej biomasy roślin, inne wykazały zakłócenia wzrostu roślin spowodowane zbyt wysokimi poziomami biowęgla. Ten spadek wzrostu roślin może być związany z poziomem pH gleby i biocharu.

W zależności od temperatury podczas pirolizy, poziom pH w biocharze będzie inny (w niskich temperaturach biochar będzie bardziej kwaśny, w porównaniu do produkcji w wysokich temperaturach).

Gdy gleba staje się zbyt zasadowa, pobieranie składników odżywczych przez roślinę jest utrudnione, a wysoki poziom materii ruchomej może negatywnie wpłynąć na wzrost rośliny.

Optymalna dawka aplikacyjna zależy od rodzaju gleby i sposobu prowadzenia upraw. Ponadto, biochar wiąże metale ciężkie i pestycydy oraz pomaga w ten sposób w zanieczyszczonych glebach.

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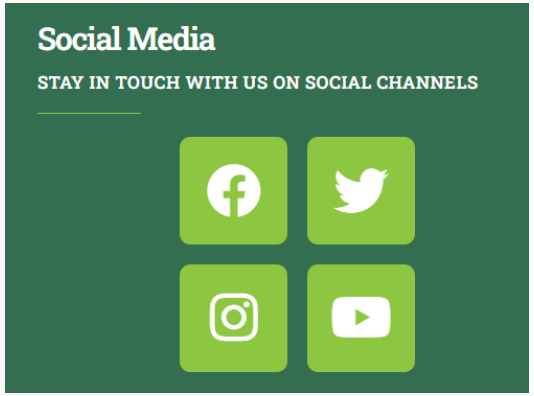

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