CONTEXT PROFILE

ROMANIA

FARMER
Niculina Roba- family farm

INNOVATION
Monitoring livestock on pasture with GPS tracker

Video

MAIN DOMAIN OF THE INNOVATION
Animal management

AGROCLIMATIC AREA
Alpine

CLIMATE
Moderate rainfall

SOIL TYPE
Clay

MANAGEMENT
Pasture dairy

TECHNICAL
Computer-based

FINANCE/INVESTMENT
Low

MARKET
Global

SOCIAL
full-time farmer

All contents of this document are expert opinions of the G4AE Scientific Technical Working Group

CONTEXT PROFILE

ROMANIA

Case Study: RO_01	Agroclimatic Zone								
Item (Key Innovation Elements)	**Alpine**	**Atlantic Central**	**Atlantic North**	**Atlantic South**	**Boreal**	**Continental North**	**Continental South**	**Mediterranean North**	**Mediterranean South**
GPS trackers	+++	+++	+++	+++	+++	+++	+++	+++	+++
GPS signal	+++	+++	+++	+++	+++	+++	+++	+++	+++
Smart phone app (easy-to-use)	+++	+++	+++	+++	+++	+++	+++	+++	+++
Battery lifetime in the tracker	+++	+++	+++	+++	+++	+++	+++	+++	+++
Herd size	+++	+++	+++	+++	+++	+++	+++	+++	+++

+++ **Strong transferability** ++ **Slightly limited transferability** + **Very limited transferability** × **Generic information/not relevant**

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Implementation Gaps

General (all agroclimatic zones):

- The cost is a limit for application to large herds;
- Access to knowledge; It requires farmers familiar with digitalisation
- Need GPS and phone signal;
- Good accuracy;

Alpine:

- GPS signal in remote areas;

Research Gaps

General (all agroclimatic zones):

- Clear cost –benefit analysis;
- Decision systems / virtual grazing / artificial intelligence;
- Animal welfare benefits;
- Tested mainly on cows. It could be interesting also for other ruminants (sheep; goat etc)

Alpine:

- How to mitigate conflicts between grazing (farming) and wildlife, especially big carnivores.

Suggestions to Adapt

General (all agroclimatic zones):

- Assure resistance / Multi function monitoring devices;
- When herd sizes are bigger it depends on the purpose of tracking the cows whether this innovation is useful. Tracking bigger herds to for example milk these cows daily is not doable.
- Add other features to monitor – heart rate; animal temperature; movement (using a pedometer) etc
- The system can be extended by adapting a speaker giving a sound signal on the collar that, after some training, stimulates the cow to move home to the cow shed to be fed and milked. This would even further decrease the work
- Verify if the App is available in national languages;

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COST-BENEFIT ANALYSIS

INVESTMENT COSTS

Total initial investment costs at start up:	low
• Initial authorisation costs (e.g. sanitary, veterinary, etc.)	low
• Initial advisory costs	low
• Initial buildings and machineries	not applicable/not known
• Initial certification costs	not applicable/not known
• Initial working capital (personal qualification, marketing and promotion, etc.)	low

ON-GOING COSTS

On-going advisory costs	not applicable/not known
On-going certification costs	not applicable/not known
On-going buildings and machinery costs	not applicable/not known
On-going working capital	not applicable/not known

BENEFITS RELATIVE TO ORIGINAL SYSTEM

- **Economic**

Reduction in energy consumption (electricity; fuel consumption)	none or low
Reduction in input use (fertilizers; pesticides; feed) etc.	none or low
Payback period	high
Product value added	not applicable/not known
Additional farm income through agroecological/agri-environmental payment schemes	not applicable/not known

- **Environmental**

Animal feed self-sufficiency increase	not applicable/not known
Biodiversity increase	not applicable/not known
Improved nitrogen cycling	not applicable/not known
Soil regeneration	not applicable/not known
Animal health and welfare improvement	none or low

- **Social**

Workload reduction	mid
Engagement of young generation	not applicable/not known

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Literature

National Language

- https://www.mdpi.com/2073-4433/13/10/1642

English

- https://www.wur.nl/upload_mm/8/5/0/209deb13-72ae-4a26-aa58-d523f256fd08_2-1%20IOF2020-Posters%20Use%20case_HR.pdf
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- https://www.sciencedirect.com/science/article/abs/pii/S0168169920331628?via%3Dihub
- https://doi.org/10.1016/j.rala.2020.04.001
- https://doi.org/10.1016/j.applanim.2024.106176
- https://doi.org/10.1111/gfs.12577
- https://doi.org/10.1016/j.atech.2023.100349
- https://doi.org/10.4141/A03-081
- https://www.sciencedirect.com/science/article/pii/S0168159106000086
- https://www.ri.se/en/what-we-do/expertises/virtual-fences
- https://onlinelibrary.wiley.com/doi/full/10.1111/gfs.12577
- https://www.followit.se/livestock/
- https://www.gpslogik.se/digitalisera-djurhallning-med-med-gps-och-iot-teknik/

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