TECH CARE

Integrating innovative **TECH**nologies along the value Chain
to improve small ruminant welf**ARE** management

Newsletter - Issue 8

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The **TechCare** project has received funding from the European Union's Horizon 2020 Research and Innovation Programme under grant agreement N°862050.

SUMMARY

TechCare webinar in collaboration with EAAP! - *by C. Morgan-Davies (SRUC)* 2

Dairy goat pilot trial in Norway – *by L. Grøva (NIBIO)* 3

TechCare scientific publication: Automatic monitoring of growth in grazing lambs is possible with a Walk-over-Weighing system – *by E. González-García (INRAE)* 4

TechCare PhD Student Michelle Reeves Wins Conference Prize – *by M. Reeves (SRUC)* 5

..... 5

TechCare Partner Team: EAAP and Agdatahub (Leader and Co-Leader WP7) 6

New Addition to TechCare: James Bright 8

TechCare in the news 9

TechCare webinar in collaboration with EAAP! - *by C. Morgan-Davies (SRUC)*

On the 17th January 2023, the European Federation of Animal Production (EAAP) invited TechCare to present results during one of its monthly webinars. The event lasted 2 hours and was very well attended, with around 105 people who joined online. Dr Claire Morgan-Davies (SRUC) chaired the event and started with a quick presentation of the TechCare project as project coordinator. Then, Dr Grete Jorgenson, from NIBIO, talked about Assessing priority welfare issues for sheep and goats in intensive and extensive systems, in a presentation prepared with colleague Prof Cathy Dwyer (SRUC). Grete focussed on the work carried out in the TechCare project and how welfare assessment protocols have been developed for sheep and goats. This was followed by a joint presentation between Dr Germain Tesniere (French Livestock Institute) and Dr Eliel Gonzalez-Garcia (INRAe), who both presented TechCare work on How to monitor welfare issues on sheep & goats farms with innovative technologies? Germain and Eliel focused on the links between the prioritised welfare issues and the choice of innovative technologies being tested either as prototype or near market on the project's experimental and pilot farms. They illustrated their work with the use of Walk over Weigh for weight monitoring and the Ultra High Frequency tags over water troughs to check water intake. Finally, after a short break, Alon Bar-Shamai (ARO), in collaboration with Prof Ilan Halachmi (ARO), presented the work done on the Israeli pilot farm in the context of TechCare: Quantifying the value of Early Warning System in sheep. Alon presented their work on water intake monitoring and how detecting issues early enough can help farm's economics. These three talks generated a lot of interests and pertinent questions were asked by the audience.

Dairy goat pilot trial in Norway – *by L. Grøva (NIBIO)*

Sheep farm visit at Innovative sheep farmer and manager Eivind Såstad Mjøen, Oppdal with Agritech Cluster © NIBIO

In the TechCare-project, mastitis, parasites, and agonistic behavior are pointed out as important factors influencing the welfare of dairy goats. Also, lameness and health issues in general are on the list of welfare issues that dairy goat farmers are keen to be able to detect at an early stage. In Norway, a pilot study on dairy goats and the use of existing and new technology for early detection of health and welfare issues started in 2022 and is ongoing.

The goat pilot is conducted in close cooperation with Storsteigen College School in Alvdal. Their dairy goats graze on the mountain farm Meløya in Einunndalen in summer, together with goats from the Livestock Production Research Centre at the NMBU University in Ås. Technology, i.e., an electronic ear-tag, a motion sensor and/or a GPS-collar, can provide information on the animal's position and level of activity in real time. This has potential to provide the farmer with knowledge on the behavior of each animal, and thus being able to attend to goats that are not healthy and fit. From the tech in the goat pilot, we can get information on distance walked by each animal. If an animal changes its own normal behavior over time, this may indicate that there is a health and welfare issue. Also, these data may provide information on the specific behavior of the goat such as running, ruminating, drinking, walking and standing still. Information on individual behavior in goats – and changes in behavior – can provide an early warning system on health issues. Connecting animal-based sensors that provide individual behavioral information with data from milk meters and weather data may in the future give us more precise information about the wellbeing of the goats – in real time. The Norwegian dairy goat pilot will be extended to run also in June – August 2023. Enjoy the interesting video!

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TechCare scientific publication: Automatic monitoring of growth in grazing lambs is possible with a Walk-over-Weighing system – *by E. González-García (INRAE)*

Live weight (**LW**) is a key and conventional indicator for monitoring and assessing overall animal performance and welfare, representing the progress through different physiological stages, while providing close indication of individual physical and health status. Measuring LW in practice is still, however, quite rare and infrequent under commercial sheep farming conditions, mainly because sessions are time consuming, stressful either for the operator or the animals. A Walk-over-Weighing (**WoW**) system was tested in this experiment lasting 14 weeks (*i.e.* 3 weeks for acclimation and adaptation and 11 weeks for data collection). We validated its use for routine and frequent monitoring of growth rate in post-weaned *Merinos d'Arles* ewe lambs (*n*= 100), reared under Mediterranean grazing conditions. The necessity for an initial adaptation period of the animals was confirmed. Also, the importance of conducting an effective data cleaning procedure of the raw database automatically collected by the WoW was corroborated. Adaptation of naive ewe lambs enabled the required voluntary passages across the weighing platform and a high volume of individual and daily data after 2-3 weeks. Close monitoring of individual growth was then possible after performing sound data cleaning. A good agreement was demonstrated between WoW LW

and a reference LW value (measured with a standard static scale). At the individual level, even with the lowest number of LW values collected with WoW, it was possible to monitor variations in LW at daily intervals. The establishment of an **early warning system to help farmer's decision-making could therefore be possible**. Our results show interesting prospects for more accurate and frequent monitoring of LW in grazing sheep without human intervention, compared to what is currently carried out on commercial farms.

Evaluating a Walk-over-Weighing system for the automatic monitoring of growth in post-weaned *Mérinos d'Arles* ewelambs under Mediterranean grazing conditions. Leroux, E., I. Llach, G. Besche, J.-D. Guyonneau, D. Montier, P.-M. Bouquet, I. Sanchez, E. González-García. (2023). *animal -open space* (https://doi.org/10.1016/j.anopes.2022.100032).

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TechCare PhD Student Michelle Reeves Wins Conference Prize – *by M. Reeves (SRUC)*

Michelle Reeves © SRUC

TechCare-funded PhD student Michelle Reeves from SRUC spoke about her research at two conferences in the last month. She visited Seville, Spain for the International Sheep Veterinary Congress where she presented results from the 2021 field pilot trial at Moredun. A few weeks later, Michelle spoke as part of the annual SRUC Postgraduate Research Student Conference in Edinburgh, where she won the second-place prize for 3rd year presentations. This was awarded for her talk on capturing behavioural indicators of welfare challenges with PLF.

TechCare Partner Team: EAAP and Agdatahub (Leader and Co-Leader WP7)

The European Federation of Animal Science (EAAP) is a federation whose members are national organizations working in the animal science sector from 35 countries of Europe and the Mediterranean area. EAAP has extensive experience in the promotion of scientific research and its dissemination and application into practice. EAAP has also a long tradition in the development of dissemination tools, training activities for scientists and the organization of international conferences. Moreover, EAAP has extensive experience in publishing both at a scientific and technical level. EAAP has been responsible for communication, dissemination, and knowledge transfer activities within more than twenty EU-funded projects – since FP6 – and technical themes. By developing online channels such as websites and social media, EAAP facilitates access to data and knowledge for scientists and technicians from all over Europe and the rest of the world. EAAP has a large database with more than 6.000 contacts of scientists and research institutes active in the field of animal science, coming from European and Mediterranean countries. EAAP has also 11 Study Commissions and several Working Groups focused on analysing and managing issues related to different aspects of animal science and the livestock industry. EAAP is co-founder and co-owner of the academic journals Animal and Animal Frontiers. In the TechCare project, EAAP is in charge of leading Work Package 7 – "*Dissemination, communication and exploitation of results*". To know more about EAAP visit the website.

Short profile of the team involved in the TechCare project:

Riccardo Carelli is a Senior EU project manager and is leading the EU projects unit within EAAP. He has worked for public (National Research Council of Italy, European Commission, Ministry of University and Research) and private (Sapienza Innovazione, IPI) organizations. He has a long experience in managing international projects (7 EU projects, both in FP7 and Horizon 2020 coordinated), as well as in disseminating and exploiting project results. Within the TechCare project, he is responsible for the WP7, in particular coordinating communication and dissemination activities on behalf of the consortium.

Marlène Sciarretta is an EU project manager with a background in political sciences (international field) and an MA in European Studies earned in Belgium. After a traineeship at the Council of the European Union, she worked for international governmental bodies and the private sector gaining professional experience in the project management field, in particular regarding events organization, dissemination and administrative activities. In EAAP she manages EU-funded projects and the newsletter. Within TechCare, she is responsible for interaction with the partners for communication and dissemination activities.

Federica Motterle's main activity is on social media: she manages all profiles and channels of EAAP. She graduated as Interpreter in English and French at the University of International Studies of Rome, then she obtained a B.A in Art History at Tor Vergata University of Rome and a Master in Social Media Marketing. Within the TechCare project, she is in charge of social media communication and management of TechCare's social media accounts.

Federico Liguori is an EU junior project manager with a background in languages and an MBA earned in his hometown, Potenza. After a traineeship at the Italian Agency for the Promotion of European Research (Rome), he worked at the Humanitas Research Hospital (Milan) on national and international research projects. Currently, in EAAP he is involved in EU-funded projects and webinars. Within TechCare, he deals with communication and dissemination activities.

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As the operator of a sovereign data exchange platform, Agdatahub brings confidence to the European players involved in the TechCare project. The API-AGRO platform acts as a "data intermediary" which aims to foster interoperability and improve data exchange between multiple actors of the agricultural sector. In the TechCare project, Agdatahub is a trusted partner that aims to facilitate and secure the exchange of welfare and technological tools data collected on farms and distributed to the project partners and beyond. The platform offers an API based approach (Application Programming Interface) allowing the sharing of data and algorithms with clear rules of diffusion and use (explicit license and economic conditions). The process is entirely trustful with confirmed identities and monitored actions. Empowerment of data by farmers allows for new ways of valuing data and creating innovative and ethical business models.

Short profile of the team involved in the TechCare project:

Gaëlle Chéruy Pottiau (Chief Service Officer)

Gaëlle is an agricultural engineer with a degree in management of agricultural and agri-food cooperatives. She used to manage complex projects in the field of professional electronic exchanges and the standardization of agricultural data. She has to her credit the standardization of a dozen agricultural EDI messages at UNCEFACT (United Nations) and the development of harmonized code repositories used in parcel exchanges in France. Gaëlle is helping TechCare's members to understand how the API platform will facilitate their data exchange.

Thomas Gomez (European project manager in digital agriculture)

Thomas is an engineer with dual expertise in agronomy and digital technologies. His experience in the field and in IT project management in several organizations has enabled him to tackle a wide range of concrete problems related to the collection and use of data in the agricultural sector. In the TechCare project, Thomas is the main contact to connect the group members to the platform API-Agro and guide them through the different functionalities. Thomas is also the co-leader of WP7, which covers the important issues around data exploitation and dissemination.

New Addition to TechCare: James Bright

James Bright (Country Manager - Breedr)

James is a beef and sheep farmer in the UK and he is UK country manager at Breedr an Agricultural Software company. James studied at the Royal Agricultural University at Cirencester, and before working at Breedr led the farms team at an insect farming company. Breedr is co-leading the WP4 data collection and is working with trial farmers in Scotland, before rolling out the data collection system across the project's countries. The easy to use app allows farmers collating information about the welfare of their sheep and goats to be done easily in the field, improving the quality of the data collected and allowing for correct data analysis.

TechCare in the news

List of past and upcoming events with TechCare partners attendance.

Event	Date	Location	Partner
←			
The Fuping International Dairy Goat Forum. Presentation by G. Caja: "Available sensor technologies for precision farming and welfare assessment in dairy goats".	6 January 2023	Fuping, China	UAB
Oral presentation at the Paris International Agricultural Show 2023. Title: "L'innovation numérique en élevage ovin" ("Digital innovation in sheep farming")	26 February 2023	Paris (SIA 2023, stand CREDIT AGRICOLE)	IDELE; CIIRPO Le Mourier
Oral presentation at the Paris International Agricultural Show 2023. Title: "Mieux suivre nos animaux pour adapter au mieux nos élevages" ("Better track our animals to better adapt our farms")	2 March 2023	Paris (SIA 2023, stand ACTA)	IDELE, CIIRPO Le Mourier, La Cazotte
Oral presentation at the Paris International Agricultural Show 2023. Title: "Collecter les données d'élevage pour améliorer le bien-être des petits ruminants: zoom sur TECHCARE" ("Collecting livestock farming data to improve animal welfare for small ruminants : focus on TechCare project)	3 March 2023	Paris (SIA 2023, stand AGDATAHUB)	IDELE, AGDATAHUB, CIIRPO Le Mourier, La Cazotte
10th International Sheep Veterinary Congress. Presentation by G. Caja: "New opportunities of using sensors in small ruminants".	6 – 10 March 2023	Seville, Spain	UAB
Agritech Cluster	22 – 23 March 2023	Oppdal, Norway	NIBIO
Livestock grazing and future technologies	25 March 2023	Folldal, Norway	NIBIO

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Tekno-fagdag	13 April 2023	Åknes-Andøya, Lofoten, Norway	NIBIO

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www.techcare-project.eu

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