



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

Newsletter - Issue 3

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The **TechCare** project has received funding from the European Union's Horizon 2020
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TechCare session in Davos



From left to right: Ilan Halachmi (ARO) and Jean-Marc Gautier (IDELE)

The TechCare project was showcased during one of the sessions at the 72nd Annual Meeting of the European Federation of Animal Science, held in Davos, Switzerland at the end of August 2021. The Precision Livestock Farming session, which took place on Monday 30th August, was chaired by Ilan Halachmi and Jean-Marc Gautier, our TechCare colleagues from ARO and IDELE, respectively. Out of the 9 interesting presentations of that session, 5 were dedicated to TechCare.

The session started with an **update of the project**, by TechCare coordinator, Claire Morgan-Davies (SRUC), who presented the overarching latest advances of the multi-actor approach project.

This was followed by WP2 leader, Cathy Dwyer (SRUC), who explained how the TechCare project has been **developing a welfare prioritization for small ruminants**. Cathy described how, by building on previous EU funded work in the AWIN project and a literature review, a preliminary list of 80 welfare issues per species was developed, considering all the issues along the production chain. Within the TechCare experts, the lists were then prioritized to develop a shorter list of approximately 30 issues per species and management systems. The most important issues that span systems included: disease, lack of sufficient colostrum in lambs/kids, and heat stress, with issues of gastrointestinal and ectoparasites and undernutrition being important in grazing systems, and environment and competition between animals more relevant in housed systems.

Evangelia Sossidou (ELGO-DIMITRA), the WP1 leader, was next on the stage to present TechCare’s **stakeholder co-design approach for improving small ruminant welfare**. Evangelia covered the TechCare strategies to manage animal welfare using innovative technologies, that are investigated through a multi-actor approach which considers the local SR production systems and involves all relevant stakeholders, from farmers to transporters, slaughterhouse, consumers and regulators.





WP3 leader, Eliel Gonzalez-Garcia (INRAe) then showcased the work he and his WP colleagues have done, looking at the **state-of-the-art in precision livestock farming technologies for monitoring small ruminant welfare**. A scientific literature review with 67 keywords was launched by TechCare partners, using several engines. A total of 991 abstracts were identified. Records entailing both Tech and Care (TC papers) were retained and classified according to the Tech and targeted Care indicators, animal species, production type and farming system. The outcome was a shared database compiling details of 368 abstracts. Preliminary analyses show that the most frequent Care issues are related to malnutrition (monitored by behavioural sensors), general or chronic fear, transport and heat stress. Image analysis (video camera) is the most quoted Tech, followed by GPS (mainly for animal geo-referencing), accelerometry, heart rate measures and ultrasonography. Eliel concluded with the need for further research to effectively match Tech and prioritised Care issues in the context of the TechCare project.

Finally, Michelle Reeves (SRUC PhD student) presented preliminary results of her PhD studies in Scotland in relation to TechCare. Michelle is primarily looking at **animal-based indicators to improve small ruminant welfare using precision-livestock farming**, and her project focuses on identifying valid, reliable, and feasible sheep welfare indicators that can be measured by PLF technology in extensive systems. Michelle explained how it will be achieved by examining three examples of sheep welfare concerns: lameness, gastrointestinal parasitism and mastitis. The behaviour of sheep affected by these conditions will be assessed using quantitative and qualitative methods. Michelle concluded that although her project will partly consist in continuing the ongoing validation work for wearable technology, it also aims to gain understanding on the application of more passive sensor systems, which are less costly and thought to be more acceptable to sheep farmers.

These presentations have been very well received by the EAAP conference attendees, with many questions both from the room and from the online participants. It was an excellent opportunity to present the latest endeavours of TechCare to the wider research and industry community.

TechCare Partner Team: TEAGASC (Co - Leader WP1)

Teagasc – the Agriculture and Food Development Authority is the Irish national body providing integrated research, advisory and training services to the agriculture (farming & forestry) and food industries and rural communities. The Teagasc mission is to support science-based innovation in the agri-food sector and the broader bioeconomy that will underpin profitability, competitiveness and sustainability. Teagasc is a client-based organisation employing approximately 1,200 staff at 55 locations throughout Ireland and have developed close alliances with research, advisory and training agencies throughout the world. We operate in partnership with all sectors of the agriculture and food industry and with rural



development agencies. Teagasc’s main sheep research facility is based at Athenry, Co Galway and its KT resources for sheep includes 105 advisers.



Teagasc has a significant input into most work packages specifically WP5. Dr Tim Keady is the TechCare project facilitator for Ireland. He has undertaken research and knowledge transfer on many factors influencing profitable sheep production including ewe genotype, factors affecting lifetime output of the ewe, age at first lambing, prime lamb production from grazed grass, nutrition of the pregnant ewe, mineral nutrition, alternative forages for grazing, finishing lambs indoors, shearing strategies, entire male lambs etc.

Dr Bríd McClearn completed her PhD on the role of perennial ryegrass ploidy and white clover in grazing systems for dairy cow production. She also examined the impact of cow genotype on animal production. Brid has extensive experience in sheep production both in Ireland and overseas. During her PhD she travelled to Massey University in New Zealand to assist with dairy cow and sheep studies for 2 months. Subsequently, Brid held a position as a marketing executive with an international meat processing company which included the development of a website and social media management for a premium beef brand. Currently Brid is a technologist at the Teagasc Athenry Research Centre specializing in Sheep Thematic networks.



TechCare in the news

List of past and upcoming events with TechCare partners attendance.

Event 	Date 	Location 	Partner 
←			
72nd EAAP Annual Meeting – The Sm@RT and TechCare projects (session 14) 6 presentations dedicated or linked to TechCare project: 1) “Update on TechCare: innovative technologies to improve small ruminant welfare management” ; 2) “Developing a welfare prioritization for small ruminants – the TechCare project”;	30.08-3.09.2021	Hybrid event (Davos, Switzerland)	SRUC SRUC

<p>3) “A stakeholder co-design approach for improving small ruminant welfare: the TechCare Project”;</p> <p>4) “Monitoring post-weaning behaviour in Merinos d’Arles ewelambs at grazing with a walk-over-weighing”;</p> <p>5) “Animal-based indicators to improve small ruminant welfare using precision-livestock farming”;</p> <p>6) “State-of-the-art in precision livestock farming technologies for monitoring small ruminant welfare”</p>			<p>ELGO-DIMITRA</p> <p>INRAE</p> <p>SRUC</p> <p>AGRIS/INRAE</p>
<p>Tech'Ovin, the National Sheep Show. Flyers and poster were presented at IDELE stand.</p>	<p>8/9.09.2021</p>	<p>Bellac (France)</p>	<p>IDELE</p>



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