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Taking action to improve working conditions on meat and dairy sheep farms: the results of the AmTrav'Ovin project

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Abstract

The renewal of the generations of farm managers and, more broadly, the renewal of the agricultural workforce is a major challenge for agriculture. The aim of the AmTrav'Ovin project was to produce resources for meat and dairy sheep farmers, their advisers and teachers, with a view to improving the conditions in which they work. Nearly $\frac{3}{4}$ of the farmers questioned felt that the administrative burden, their work-life balance and their working conditions were unsatisfactory. Knowing the behaviour of their animals and herd, getting involved in collective organisations or delegating certain tasks, and adopting more grazing systems are, along with the use of modern, adapted equipment, the main levers for action. Ergonomic studies of emblematic tasks such as lambing, training ewe lambs for milking, setting up night pens and trimming have provided design guidelines for concrete organisational improvements that take into account both the farmer's activity and animal welfare. These innovations will continue to be rolled out by supporting projects run by advisors and teachers who are not work specialists.

Key words: attractiveness, innovations, design benchmarks, ergonomic approaches, sociological approaches

Introduction

Although it appears to have slowed over the last ten years, the workforce on meat and dairy sheep farms continues to shrink (Depeyrot *et al.*, 2022). Those involved in the meat sheep sector are concerned about the future, as the 40% of farmers over the age of 50 account for almost half of the livestock (Gohier, 2022). Farming activities, which are manual and sometimes 'dirty', are often seen as hard work and unattractive (Servière *et al.*, 2019). For many recently established farmers, whether or not they come from a farming background, working time and working conditions have a major impact on the long-term future of their business.

The "Inn'Ovin" interprofessional programme has two objectives: to create more jobs throughout the country and to make the job and work of sheep farmers more attractive. The AmTrav'Ovin project was born out of this desire to revitalise the industry, and its aim was to identify, understand and disseminate new forms of work organisation, both individual and collective, and to produce benchmarks for designing tasks so

that practical improvements can be made in the way they are carried out. To take full account of the social dimension of sustainability in livestock farming, a partnership was set up in the field, with advisers from the Chambers of Agriculture, producer organisations and technical services specialising in dairy production, from several French regions, and in the scientific field, with researchers in sociology and ergonomics. In the partner regions, multi-stakeholder groups made up of farmers, advisers, teachers and preventionists were involved in selecting innovations, validating deliverables and promoting the results locally.

Given the diversity of the initiatives undertaken, this article sets out to describe the method used for each of them: individual innovations, collective work arrangements, ergonomic benchmarks and the experience of exchanging practices between peers.

1 The main areas of dissatisfaction for breeders

A 10-question closed-ended form to identify and prioritise the main work-related difficulties as perceived by sheep farmers themselves was put online in autumn 2019 as part of the Inn'Ovin programme. It was relayed to those involved in the missions in Spain and Scotland, via the project partners' social networks and then by Ensaf students at the Sommet de l'Élevage (Jousseins, 2022).

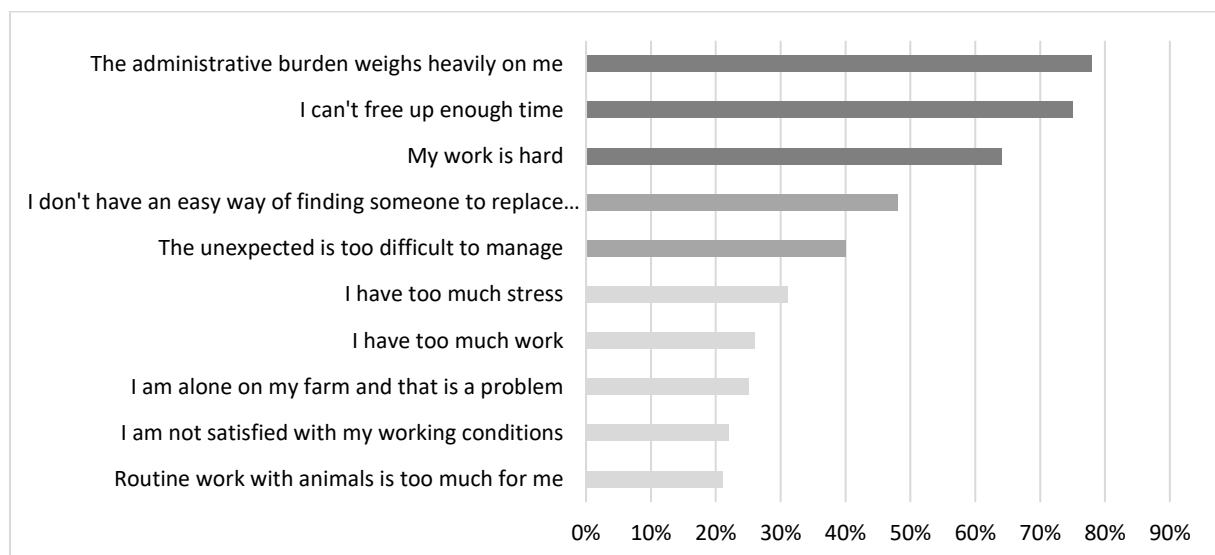


Figure 1: Percentage of farmers expressing a work problem

Of the **317 responses**, 78% of farmers in all categories felt that the **administrative burden was a problem** for them. **The balance between private and professional life came** second in the list of dissatisfactions expressed (75%), even more so among women (87%) than men (70%).

Difficulty is the third difficulty expressed by 64% of the farmers who responded. More of those who had been in business for less than ten years (75%) complained about this than those who had been in business for more than twenty-five years (55%), no doubt due to the better equipment available to farmers in the cruising phase. 80% of women felt that their work was arduous, compared with 58% of men.

Generally speaking, a majority of respondents are satisfied with their working conditions, their workload and the workload generated by the animals (Figure 1).

Box 1 - Delegating administrative work

In response to farmers' concerns about the administrative burden, two case studies have been included (see part 3 on collective innovations).

Depending on the area and the contracts involved (vulnerable zones, High Environmental Value, various MAEs, etc.), it is increasingly difficult to meet the regulatory administrative requirements. The Chambers of Agriculture in the Lot and Dordogne have set up some original schemes to help farmers meet their obligations.

The administrative employers' groups in the Lot department offer two complementary services: updating the health booklet, drawing up the provisional manure plan and keeping the spreading booklet. In the Dordogne, the "regulatory and administrative support" packs bring together all the basic regulatory documents in a single service.

A score was established according to the number of difficulties expressed by the farmers in our sample:

- from 0 to 3 difficulties, the working situation was rated as **"healthy"** (41% of farmers);
- from 4 to 7 difficulties, the work situation was assessed as **"worrying"** (49% of farmers);
- from 8 to 10 difficulties, the work situation was considered **"degraded"** (10% of farmers).

These three profiles include both experienced and recently-established farmers, men and women, individual farms and associations, meat producers and dairy farmers. Regardless of the number of dissatisfactions expressed, 77% of the farmers in the sample said that they would like to see improvements in their working conditions. On the other hand, they are more reserved when it comes to support, with only 1/4 wishing to call on an adviser to help them in this process.

2 Individual organisational innovations in France, Spain and Scotland

2.1 Nearly 40 semi-structured interviews to describe work improvement solutions

We described innovative 'work' solutions and organisations of interest in highly contrasting systems in France and during two missions abroad, one in Spain and one in Scotland. The choice of farms on which to base the portraits was guided by the work of the multi-stakeholder groups in the project's partner regions, which defined the issues to be investigated as a priority. Next, the networks of sheep technicians in the field, who are best placed to identify the most original and innovative situations in their area, were mobilised.

Novelty is relative to the context in which it is expressed (Béguin and Cerf, 2004). Sociologists (Mendras, 1976; Alter, 2010) have shown that innovation is a commonplace activity involving a wide range of objects (technical, organisational, managerial, etc.), and that its adoption depends on the existence of socio-professional networks within which players exchange information and knowledge, and then develop new skills (Goulet and Vinck, 2012). Cross-dissemination between regions has amplified the innovative and 'situated' (i.e. socially and culturally constructed in a given context at a given time) nature of the solutions.

28 semi-directive surveys were carried out in eastern France (Aube), western France (Mayenne and Maine-et-Loire), south-western France (Dordogne and Lot), south-eastern France (Vaucluse), the Massif Central (Allier) and in Aveyron for dairy farms (table 1).

Production orientation	France	Spain	Scotland
Suckler sheep	20	3	5
Dairy sheep	8	3	
Total	28	6	5

Table 1: Number of surveys carried out by country and type of production

The method used is storytelling (Wilber and Harrison, 1978), which extracts general elements from a factual narrative, in particular an understanding of the genesis of the solution implemented. This approach was partly used again during the missions in Spain and Scotland.

The innovations studied during the two European missions (free-range systems in Scotland, all-barn systems in Spain and an example of factory farming) put into context the 'work' solutions implemented on French farms, which are often smaller in size and combine grass-farming and sheep-farming.

2.2 Numerous solutions to improve organisation and working conditions

46 different solutions were identified:

- 6 relate to the reorganisation of the workforce (salaried employees, associations, etc.);
- 21 concern the modernisation of equipment (new technologies, feed distribution, pasture equipment, restraint, etc.);
- 19 relate to farm practices or management (changing lambing or milking times, reducing the frequency of feed distribution, increasing grazing, etc.).

These three categories of levers are interdependent. The use of new technologies, for example, has consequences for practices and the organisation of the workforce. The 11 portraits of farmers, chosen for their diversity of systems, sectors and solutions implemented, show that farmers rely on several levers and implement combinations of solutions, i.e. between 2 and 16 solutions among the farmers interviewed, with half of them using at least 6. The preponderance of solutions concerning materials/equipment should be seen in the light of the importance given to reducing drudgery in the responses to the online questionnaire (64% of farmers, part 1).

In terms of simplifying practices, grass systems are presented by farmers as solutions for improving working conditions, which also reflect their current preoccupation with more agro-ecological management. We believe that the way in which work is organised also depends on the structure of the farms (functionality of the land, presence of water, accessibility, etc.), their equipment and the efficiency of the worker. For example, some 'indoor' systems can be just as efficient from a labour point of view as 'grass' systems. Instead, we have proposed a discussion on how to take labour into account when choosing a system (Box 2).

3 Collective organisations in the regions and delegation

Seven schemes for the collective organisation of work and delegation in the regions were described in the project: the group purchase of Scottish ewe lambs in the west, pastoral groups in the south-east, delegation of administrative work in the south-west (Box 1), actions taken by a cooperative to facilitate the work of farmers in Aragon (Spain), an employers' group (EG) in Aveyron, an EG associated with a Cuma in Allier, and a service company in north-east France.

They were the subject of a semi-directive survey to characterise the genesis of the system, its operation, the cost and time devoted to running it, the perceived impact on work, the technical and economic results, its advantages and disadvantages, the trajectory of the system, work organisation, coordination, governance and relations at work.

The last three cases, which are the subject of the remainder of this section, were documented as part of a final dissertation in sociology directed by François Purseigle (INP-Ensat, UMR Agir) with the aim of identifying and characterising the factors that encourage the establishment of such collective organisational arrangements (André, 2019).

3.1 Three contrasting systems

The **Aveyron-based EG**, set up in 1994, covers three communes and employs three people. Nine of the ten members use employees primarily to deal with

Box 2 - Grass or sheepfold?

The search for more agro-ecological practices is leading to a return to more pasture-based systems, for which farmers also cite a reduced workload. To raise awareness among project sponsors, a 'quiz' has been drawn up on the advantages and disadvantages, from a labour point of view, of systems based on grazing or sheepfolds: working time and conditions, regularity and predictability of working hours, access to new technologies, etc.

seasonal peaks in work on the flock (insemination, lambing and sometimes shearing) and crops (haymaking, silage). For two farmers, a structural work overload means that they need to call on this workforce 2 or 3 days a week for on-call tasks (feeding, mulching, milking, etc.).

The **Allier EG, which** comprises three farms (beef cattle, poultry and sheep) and a Cuma, employs two people, including the Cuma driver. The administrative aspects are managed by the Association Départementale des GE.

The **service company** operates within a 200 km radius of its head office, depending on changes in its customer portfolio. It offers highly technical services (ultrasound scans, insemination) and others linked to seasonal work (trimming, shearing, flock handling). Its originality lies in the support it offers for lambing, which farmers consider to be their "core business" and for which they rarely call on outside labour. Depending on the nature of the services provided, they are invoiced by the day or by the hour.

Features	GE aveyronnais	GE de l'Allier	Service company
Dimension	10 dairy sheep farms 3 employees	3 farms (beef sheep, beef cattle, poultry) 1 Cuma 2 employees	The boss + 2 employees Customers: meat sheep farmers

Table 2: Characteristics of the three collective work organisation systems

3.2 The role of geographical proximity

It determines how the players in a given area are to be coordinated. In Aveyron, geographical proximity makes it possible to hold monthly face-to-face meetings to decide on employees' schedules, for example. In Allier, the Cuma has the human and material resources needed to set up and manage the EG. The low density of sheep farming in north-eastern France, and the consequent remoteness of the farms, which are a handicap when it comes to recruiting a competent employee or self-organisation, have become an opportunity for the emergence and development of the service company.

3.3 Cross-disciplinary learning

For both EGs, the quality of the employee is based on his or her ability to **learn situated know-how** (the validity of which depends on a particular production site). Employees learn by doing tasks over and over again, rather than by applying standardised procedures. Sharing a salaried job is also a resource for members, as "good practice" on farms is passed on from one farm to another.

The involvement of the service company means that the farmers are able to **distance themselves from the skills and know-how they have inherited or built up** during their apprenticeship. This transmission is facilitated by the practical work carried out jointly by the farmers and the service provider.

3.4 Little difference in work organisation between farmers and employees

There is no division of labour among GE farmers: **most of the time, employees work on the same tasks** as farmers, either simultaneously or not (for example, one does the morning milking, the other the evening).

Understanding the particularities of farmers and farms in order to implement an action is the challenge for each intervention by the service company. While the members of the company insist that their services cannot be standardised, the **farmers are also making adjustments to the way their work is organised**, to prepare for the arrival of the company.

3.5 Oral exchange as the main form of coordination

In the three collective action schemes studied, **oral exchanges** remain the preferred method of coordination between farmers/employees and/or service providers, no doubt because of the limited

division of labour. This way of working is seen as flexible, responsive and adaptable to the realities of working with animals, and is seen as an advantage.

It is in the Aveyron EG that the coordination is the most elaborate, so that all members have access to one of the three employees at the time of peak lambing, which presupposes planning the insemination of their ewes to avoid overlapping lambing periods. A member is responsible for administrative management, paying salaries and invoices, and then organises a monthly meeting to plan the work of the employees, which is also a place where, through discussion, farmers can raise and resolve problems relating to the application of the internal rules.

By providing part-time labour, shared equipment and turnkey services, these new forms of agricultural work (Fréconon *et al.*, 2021) reduce farmers' workloads, make it possible for them to take rest days, build a social network between farmers and improve their know-how. The AmTrav'Ovin project shows how schemes to mobilise extra labour from outside the family reshape decision-making, forms of learning the trade and the work of the farmer-employer (Nguyen *et al.*, 2022). This opens up new avenues for research into the identification and characterisation of new delegation and subcontracting practices on French livestock farms. The issues currently facing agricultural development are the conditions of access to these arrangements for geographically dispersed and often diversified production (Charbonnier, 2022), and the identification of the success factors of these arrangements, which are not well established and often rely on the leadership or even charisma of certain farmers.

4 Test sites, e.g. lambing

Five "test sites" emblematic of work in sheep production were the subject of diagnoses carried out by an ergonomist from the Cher Chamber of Agriculture on agricultural college farms and experimental stations (table 3).

Type of site	Website	"Witness site"
Experimental station	Ciirpo (Limousin)	Observation of gestation in the feeding troughs
	Carmejane (south-east)	Setting up night parks to prevent predation
Agricultural high school farm	Saint-Pouange (Aube)	Lambing in the sheepfold
	La Cazotte (Aveyron)	Dressing ewe lambs for milking
	Fountains South Burgundy	Hoof trimming

Table 3: Test sites by site

4.1 Observing "work in progress"

Based on objective observations (movements, number of interventions, postures, etc.) and subjective observations (knowledge of how the operator experiences his work), the aim of this monitoring was to understand the work situations, identify the levers for improvement and then summarise and disseminate those that could be of interest to the greatest number of farmers. The work situations were observed in several sequences in order to capture their variability, and interviews were conducted with all the operators. The information gathered was analysed to characterise the difficulties encountered, given the context, and to formalise the initial avenues to be explored in order to avoid them. This summary was presented to the people present during the observation phase, using photos and videos to complete, correct and validate the diagnosis. Presenting the results of the study to the project's multi-stakeholder groups helped to identify and enrich the proposals most likely to be implemented by most farmers.

4.2 Example of lambing on the farm of the Saint-Pouange agricultural college

Lambing in the sheepfold is a crucial moment that determines the farm's technical and economic results. At Saint-Pouange, the farm manager's aim is to guarantee parentage for the sale of breeding stock and to ensure that each ewe rears its own lambs. The mother-lamb pairs are therefore systematically placed in lambing boxes, which remain in place throughout the lambing period. The main questions concerned (i) the working posture in the hutches, (ii) the numerous manipulations of the animals (carrying the lambs to the hutches, taking them out for care, monitoring, feeding and watering the animals three times a day), (iii) the relevance of interventions at lambing time, which require stepping over the troughs, or even grabbing the ewe, laying her down and holding her down before searching her if necessary, (iv) the arduous task of setting up and dismantling the huts for each lambing period, i.e. four times a year. Discussions centred on whether or not it was necessary to help the ewes give birth, and on the need for technical criteria that would enable the decision to intervene to be made objectively. The ewes were no longer monitored in the hutches, but this had no negative effect on the lambs. Consideration has been given to open-air lambing, which offers the animals more space and facilitates the mother-lamb relationship.

4.3 Teaching

All the "test sites" investigated in the project involved animal handling, and the operators mentioned the importance of taking **into account the relationship with the animal in order to work more serenely**. A video on this subject, which can be used as part of a training course, has been produced by Stéphanie Daydé-Fonda (breeder, 'driving dog' trainer approved by the Institut de l'Élevage since 2015).

The five diagnoses were carried out on farms that could be considered as 'demonstration' or 'learning' sites, either for students (on agricultural college farms) or for farmers or advisers (on experimental farms). In all cases, the workers very much appreciated the ergonomist's contribution, as she provided a welcome distanced **external viewpoint** and **re-examined everyone's practices**. In some cases, she helped them to "think outside the box", even to the point of questioning the way they did things.

5 Sheep hoof trimming: requirements and conditions for success

The task of hoof trimming is at the heart of many issues relating to the economic development of the sector, animal welfare, health, safety and comfort for farmers, human development and the attractiveness of the profession. The ergonomists' work on this activity has focused on gaining a detailed understanding of what is involved in the hoof trimming task; identifying the difficulties associated with trimming in order to design more appropriate, more efficient means of work; putting together an argued point of view on the problems encountered by operators; involving professionals in the design process.

5.1 Specifications for a trimming system that meets the needs of farmers and the welfare of the animals

Initially, an ergonomic diagnosis of performance identified all the difficulties encountered by the farmers and determined the causes behind the harmful consequences for humans and animals. This diagnosis was based on observations made by the ergonomists and simple self-confrontation interviews (reflexivity on action) and crossover interviews (Mollo and Nascimento, 2013; Flandin 2017) focusing on the work activity of sheep farmers during trimming. Secondly, in-depth analyses and interviews with farmers were carried out to identify their needs.

The study made it possible to identify several stages in the trimming activity: taking the ewes to the turning cage, restraining the animal, turning the animal over, the actual trimming, repositioning the animal on its feet and taking the ewe out to the downstream pen, cleaning the equipment and the premises. The design guidelines, two examples of which are shown in table 4 (restraining the animal and the trimming task), list the working methods to be used to ensure that everything goes smoothly and that any difficulties are

eliminated. They are a tool for dialogue with equipment suppliers and farmers to help them organise their trimming activities more effectively.

Stage	Difficulties identified	Design guidelines "Make sure ..."
Restraining the animal	<p>The system does not contain all the animals (of different sizes) and does not allow them to be straightened easily if they lie down.</p> <p>The system requires physical effort.</p> <p>Animal welfare is not always respected.</p>	<ul style="list-style-type: none"> the device is easy to use, quick and robust to adjust to the different body sizes of the animals the animal cannot move forwards, backwards or lie down when restrained on its 4 legs to limit the number of intermediate operations required by the groom to restrain the animal to quickly check that the animal is not slipping and is comfortably seated
Hoof trimming	<p>Binding posture of the breeder.</p> <p>When the horn is too hard or the blade's cutting power is impaired, a great deal of strength must be applied to cut.</p> <p>Significant muscle fatigue.</p> <p>Risk of injury to the breeder.</p> <p>No space for trimming equipment, lots of back and forth and rotation of the spine to access tools.</p>	<ul style="list-style-type: none"> the sheep farmer keeps his elbows below heart level when trimming there must be room for the sheep farmer's feet (supports) in line with the trimmed foot tools (disinfectant spray, gloves, sharpener, spare pruning shears, bottle of water) can be stored, placed and retrieved within easy reach when trimming. the groomer has easy and safe access to both sides of the device (two-person trimming, device cleaning configuration)

Table 4: Examples of design benchmarks for a trimming device

5.2 Critical skills repository

Ergonomic diagnostics aimed at identifying the content that feeds the know-how incorporated (carried by the senses and difficult to verbalise) by breeders considered to be 'experts' (successful at trimming) were carried out on several reference sites. This made it possible to document their experiences and feelings, as well as the meanings they attribute to certain **weak but discriminating signals** that are the hardest for novices to spot. In this way, the research made it possible to go beyond formulas such as "there's no word for it", "you can see it", "you can feel it", "it's obvious" (Sola, 2007).

Observations of situations carried out with BTS (advanced vocational diploma) Animal Production and Baccalauréat CGEA (Agricultural Business Management) students have targeted the most recurrent difficulties encountered by students in learning to trim cattle. An inventory was drawn up of the different methods used by teachers to develop practical skills on a trimming site. The observation and analysis periods were punctuated by iterative exchanges with the farmers in order to communicate hypotheses and results and to define critical points collectively.

Three critical skills have been identified (Vergnaud, 1995) for hoof trimming: **"being able to..."**. (i) assess the condition of the hoof, (ii) choose the appropriate procedure, (iii) carry out suitable trimming.

An extract from the Critical Competence Reference System (figure 2) lists the categories constructed by the experts on certain areas of the foot to identify the condition of the hoof: here, the **assessment of the condition of the sole according to the criterion of the level of coverage of the sole by the horn of the wall**.




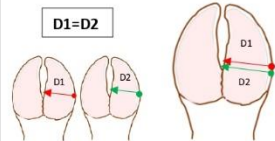

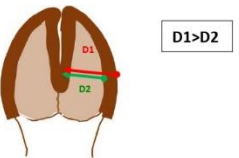
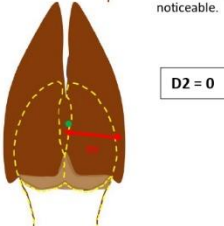
Hoof state identification			
State of sole (soft horn)			
The level of covering of the sole			
<p>Challenges: preserve the postural balance of the animal (static and dynamic) by distributing the compressions applied by the counter-reaction of the ground on its foot as well as possible.</p> <p>Risks: creation of a postural imbalance caused by an excess of horn producing a compression concentrated on certain zones in support on the ground (inflammatory risks by compression, postural compensation). Presence of an embarrassment in the kinetics of the movement of the animal</p>			
<p>Résultats</p> <p>Green : satisfactory Orange : Unsatisfactory + or - important depending of the case Red : Unsatisfactory and very urgent</p>	<p>The sole is not covered with horn</p> 	<p>The sole is covered with horn on its extremities</p> 	<p>The sole is completely covered with horn</p> 
<p>Categories (sensory)</p> <p>Prerequisite</p>	<p>Visual and tactile (assessment of the degree of covering sole / horn)</p>	<p>Visual and tactile (assessment of the degree of covering sole / horn)</p>	<p>Visual and tactile (assessment of the degree of covering sole / horn)</p>
<p>Know how to explore</p> <p>What is he looking at?</p> <p>What is he touching?</p> <p>What does he smell?</p> <p>How?</p>	<p>We observe a differential of color between the sole and the horn of the wall horn but the latter doesn't cover the sole. We observe that the distance between the end of the white line and the interdigital space (D1) is the same as the distance between the end of the wall and the interdigital space (D2).</p>  <p>D1=D2</p> <p>When you slide your finger from the center of the sole to the wall, you feel that there is no difference in level. "The bottom of the foot is completely flat"</p>	<p>Being able to distinguish the sole from the horn</p> <p>The sole: living part of the hoof. The wall horn: external part of the hoof. Over time, the excess horn grows and covers the sole.</p> <p>How to distinguish them? What clues?</p> <ul style="list-style-type: none"> The color of the sole is always lighter than the horn of the wall. The color of the sole can range from pink up to beige and light brown. 	<p>Know the color evolution of the sole over time:</p> <p>When the sole is pink, the hoof was cut less than a week ago. The more the ewe walks, the more a thin film of skin will appear on the sole and will therefore give way to a beige, slightly brown color.</p>
	<p>We observe a differential of color between the sole and the horn of the wall horn. The distance between the end of the white line and the interdigital space (D1) is greater than the distance between the end of the wall and the interdigital space (D2).</p>  <p>D1>D2</p> <p>When you slide your finger from the center of the sole to the wall, you feel an extra thickness. "The underside of the foot is at two levels"</p>	<p>We observe that the horn of the wall completely covers the sole. There is no more color differential, only the dark brown horn is noticeable.</p>  <p>D2 = 0</p>	

Figure 2: Extract from the table of critical skills - State of the sole.

In this example, the expert farmers constructed three main categories of sole coverage when the sole (i) is not covered with horn, (ii) is covered with horn on its extremities, (iii) is completely covered with horn. To be able to recognise the state of coverage of the sole, the farmer constructs (i) visual cues, which are the difference in colour between the sole and the horn and the distance between the outer edge and the interdigital space; (ii) tactile cues by sliding his finger from the centre of the sole to the wall. To be able to use these categories, the professional must be able to distinguish the sole from the horn, be familiar with the evolution of the growth of the hoof and have built up colour markers that make it possible to assess the point at which the farmer can continue to remove horn. The decision as to what action to take (not trimming, trimming a little or a lot) is determined by the identification of the recovery category.

The repository of critical skills for mastering trimming defines priority learning targets but does not suggest the route to be followed or the means to be developed (design of "training situations") to encourage the emergence of these skills. Based on this very detailed knowledge of the task, the recurring difficulties encountered by learners, the critical learning skills and the criteria enabling experts to perform well, a training-by-doing module could be developed to accelerate learning (Beaujouan *et al.*, 2013; Récopé *et al.*, 2019)

6 Tackling work in a group of farmers: an example of a collective approach to co-constructing levers for improvement

During the first working session of the multi-stakeholder group in the northern Occitanie dairy basin, the group leaders considered the ways in which on-call work could be approached and solutions adopted to improve the situation of farmers by a livestock technician or business advisor unfamiliar with approaches to work. The hypothesis was formulated that a collective approach based on exchanges between peers would lead farmers to co-construct their own solutions based on the sharing of experiences. To provide a framework for the discussions, the group leaders asked the farmers to express their views after watching videos of milking 'in progress' in two contrasting types of milking parlour (rotolactor 30 stations and a parlour with a 2 x 12 station high line pit). The choice of this task emerged from the first participatory meeting of the multi-stakeholder group as the first on-call workstation to be improved because of its frequency during the day and the year. Farmers on two farms were filmed (Box 3) during two successive milkings (evening and morning). The short video sequences were organised chronologically and by theme, and then discussed with the farmers, who explained their visualised activity. Then, at a group meeting, the participants discussed the organisation of their work on the basis of these video sequences and compared them with their own work experience in terms of the choice of milking installation, animal traffic (before and after milking), human traffic and milking incidents.

It is possible and relatively easy to talk about "real" work, i.e. to report on the strengths, difficulties and areas for improvement in the facilities and the organisation of the milking yard using videos. Farmers stressed the importance of combining this participatory meeting with *on-site* visits. This method enables an advisor to lead a meeting on this theme and to support the participants' thinking, who analyse and discuss the work of 'others' in a sympathetic way and relate it to their own situation. It is important to take into account the time needed to shoot the video, select the sequences and lead the group. Shooting equipment is simple and accessible, but it does require a certain amount of experience. It is possible to delegate the analysis of the footage to students or an ergonomist.

To facilitate the deployment of this method, it is possible to film only one farm and to use the filmed sequences, accompanied by instructions for use, in other groups. The method, which consists of filming the work

and having the filmed worker explain what he is doing, is suitable for a particular task, but much less so for strategic aspects of work organisation, where video is powerless to 'show' the cognitive workings.

Box 3 - Testimony of a breeder filmed

"The experience of being filmed went well for us and the animals. The ewes are used to the radio or to seeing different people, so it didn't change anything in their behaviour. When we see ourselves on video, it's interesting to see the repetitive gestures or the body positioning on a daily basis. This method should be offered to breeders who want to improve their working conditions. We appreciated this approach, and the fact that we had a video support during the discussion meeting helped with the facilitation. The other farmers can put themselves more in the situation of the farmer being filmed. The moderator has a dynamic and concrete medium with which to stimulate debate.

Conclusion

Work is a multifaceted subject, seen as a resource to be optimised, an organisation to be managed, a meaning to be rediscovered and a quality of life at work to be preserved. The AmTrav'Ovin project tackled this multi-faceted issue with deliverables on simplifying practices, collective organisation in the regions, and modernising equipment and buildings. The portraits of farmers show how, through their reflection and the implementation of a combination of solutions, they are improving their well-being at work.

AmTrav'Ovin has enhanced the social viability of sheep farms by analysing and optimising innovative and effective methods of organisation. In close contact with those in charge of the sector, it has shown

breeders that taking greater account of work on sheep farms is a factor in making these jobs **more attractive**.

An increasing number of **new sheep farmers** are not from a farming background (Chouteau *et al.*, 2020) or have no agricultural training. As a result, the 'professional' skills of project leaders are sometimes limited and, among the problems identified in the project '*New profiles in dairy and meat sheep farming, understanding them better to support them better*' (CNE funding), work organisation difficulties are ahead of technical difficulties. Our results provide resources for these new entrants to the world of sheep farming, to help them regain their work-life balance and improve their skills.

The extensive use of **ergonomic** analyses in the project has led to the development of operational deliverables for training and equipment manufacturers (skills repository, functional specifications for a trimming device) and has shown the importance of integrating this discipline more often into the support provided to farmers. Ergonomists have introduced new ways of approaching these issues with farmers, focusing on analysing needs and problems rather than proposing standardised solutions. Better integration of this discipline into agricultural development organisations would send out a strong signal that the 'work' issues faced by farmers are being taken into account. "Filming the work in progress" formed the basis of a project run by a group of dairy sheep farmers. Since specific support on the theme of work seems difficult to implement, this dimension must be better taken into account in the technical support of farms.

Ethics

The authors declare that the experiments were carried out in compliance with the applicable national regulations.

Declaration on the availability of data and models

The data supporting the results presented in this article are available on request from the author of the article.

Declaration on Generative Artificial Intelligence and Artificial Intelligence Assisted Technologies in the Drafting Process.

The authors have used artificial intelligence-assisted technologies to translate from French to English.

Declaration of interest

The authors declare that they do not work for, advise, own shares in, or receive funds from any organisation that could benefit from this article, and declare no affiliation other than those listed at the beginning of the article.

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All the deliverables from the project can be consulted at this address: <https://idele.fr/amtravovin/>



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