



European Network for interactive and innovative knowledge exchange on animal health and nutrition between the **sheep** industry actors and stakeholders

Report on the main end-users needs and issues for health and nutrition management of the flock



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement N° 863056.



04/01/2021



D2.1 – REPORT ON THE MAIN END-USERS NEEDS

Project Data		Deliverable Data	
Project	EuroSheep	Deliverable identifier	D2.1
Project	European Network for interactive and innovative knowledge exchange on animal health and nutrition between the sheep industry actors and stakeholders	Deliverable beneficiary lead	NEIKER
Grant Agreement N°	863056	Type of deliverable	R: Report
Start date of the project	01/01/2020	Due Date	31/12/2020
End date of the project	01/06/2023	Date of delivery	04/01/2021
Duration	42 months	Classification	PU
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1. Executive summary

The information contained in this report comes from the data gathered through the survey completed mainly by farmers, shepherds, advisors, veterinary practitioners and scientists.

Results from the EU Survey on the main needs and interests from the stakeholders to foster their acceptance of the available knowledge (to enhance the productivity of sheep farming regarding nutrition, health and management)

Introduction and objective

Prior to attempting to improve the profitability of sheep farming it is crucial to gather, analyse and assess the main needs from the stakeholders. And once that the topics related to reproductive management and lamb mortality were assessed within the SheepNet project, in this study we will focus the attention on animal health and nutrition, since they are also key issues to achieve optimum levels of profitability as well as to enhance the sustainability of sheep farming.

Good animal health management is essential to reduce the loss of animal performances (e.g. lamb growth, ewe milking yield), veterinary costs and mortality rates. It also allows improving feed efficiency, reducing the input level per unit of product produced, or enhancing productivity with the same level of input. Regarding an appropriate management of nutrition management, it determines the productive level and efficiency rates, as well as the main source of variable costs.

Methodology

From May to July 2020 an online survey was launched in the participant countries within the EuroSheep project in order to assess the opinion of sheep farmers and advisors. In particular, the objective of the survey was to identify the main challenges and needs to enhance the profitability of sheep farming through the nutrition and health of adult sheep, yearlings and lambs, as well as the potential best management practices and the most frequently used sources of information on those topics. The survey was developed and agreed between the national facilitators (NFs) of the EuroSheep project (MS 2.1: Survey on needs).

Participants were requested to select and rank in order of importance up to a maximum of five topics from a set of lists (gathering main challenges and needs) according to their opinion on what they considered as the main issues regarding the nutrition or health of sheep, yearlings or lambs.

When analysing the data, topics ranking in the 1st place were scored with 5 points; 2nd = 4 points; 3rd = 3 points; 4th = 2 points; 5th = 1 point. In this way, the topics that obtained the highest total values were selected as the most important ones for each professional profile (either within EU or per country) or per productive orientation (meat or dairy) or farming system (intensive, semi-intensive, etc.).

However, there were a number of respondents that did not fulfil some of the questions properly, so the database had to be carefully checked in order to try to keep as many valid surveys as possible:

- Whenever the respondent did not mark a rank, but for instance, he/she used the same value (1, 1, 1 ... or 3, 3, 3...), symbol (?) or letter (X) to mark the options) it was decided to consider an intermediate scoring value (= 3) for all the options marked.
- When a ranking was included but there was a missing number, we re-assigned the values to the ranking (for instance, if the ranking was (1, 2, 4 and 5) it was considered as (1,2,3 and 4))
- Otherwise, if a combination of different numbers was used, or values and symbols, but not a clear ranking was appreciated (for instance 1, 1, 4, 4 or whatever other combination), that part of the survey (for instance, NUTRITION) was not considered for further analysis.

Regarding the professional profile, there were 111 respondents initially identified themselves within the category OTHER. However, according to the specifications provided later, some of them could better reassigned. For instance:

- 16 respondents that indicated any of the following terms, were identified as “Advisor / Consultant”: *Agronomist, Agronomo, animateur organisation nationales, Ingenieur agronome, Animatrice filiere ovin lait, Tecnico Aziendale, zootecnico, Zootecnico Aras, Controllore Zootecnico.*
- 10 respondents that indicated any of the following terms, were identified as “Farmer”: *part time farmer, farmer, Tenant farmer, grazier, contract shepherd, farm manager, care assistant & part time sheep farmer.*
- 4 respondents that indicated Veteriner Hekim, Medico veterinario or Veterinario were identified as “Veterinary practitioner”.
- 81 could not be assigned to any of the categories since they did not provide any information at all or it was not relevant for the objectives of the project (retired, crofter, secondary school, vaccine manufacturer, chef de project, quality program manager, etc.)

For the purposes of the project, the categories “Farmer / farm owner” and “Shepherd / Farm worker” were joined together, since they are supposed to share a comparable perspective of reality. However, it was finally decided not to join “Advisors / Consultants” and “Veterinary Practitioners” due to the important variability of activities that can be included within the first category, and the specificity of knowledge of the “Veterinary practitioners”, particularly taking into account that one of the key topics of the survey was focused on animal health.

The results of the surveys were presented during the National workshops (NWS in each participant country for internal discussion and validation, as well as to the Scientific and Technical Working Group both at the national level and at the international level. The consolidated results were presented during the 1st TNWS.

Participants in the survey

A total of 1366 people participated in the survey, although as stated earlier some of them had to be dismissed for not providing valid information. Finally, 1163 surveys (85%) were accepted to assess the needs on nutrition, 1182 (86.5%) for health, 1246 (91.2%) for management practices and 1223 (89.5%) to assess the main information sources.

There was a significant contribution of farmers, shepherds or farm workers, who represent 57% of the participants, followed by advisors or consultants (12%). The country of origin of the respondents and their professional profile is shown in the next table.

	Farmer / farm owner	Shepherd / Farm worker	Advisor / consultant	Researcher / Scientist	Veterinary	Teacher / lecturer	Student	Other	Total	%
France	95	2	72	10	22	6	3	7	217	15.9
Greece	83	3	6	16	11	2	1	4	126	9.2
Hungary	99	2	7	1	1	2		4	116	8.5
Ireland	126	1	24	1	2	3	3	5	165	12.1
Italy	85	2	25	18	27	2	7	26	192	14.1
Spain	65	6	9	4	36	1		1	122	8.9
Turkey	128	11	11	10	15	12	72	56	315	23.1
UK	62	5	10	6	5	5	2	6	101	7.4
Other	3	1	1	2	2		1	2	12	0.9
Total	746	33	165	68	121	33	89	111	1366	
%	54.6	2.4	12.1	5.0	8.9	2.4	6.5	8.1		

Regarding the productive orientation, 61% of the respondents were involved in meat farming systems (mainly from Ireland, France, Hungary, UK and Turkey) and 32% in dairy sheep (mainly from Greece, Italy, and Spain). Due to the low amount of surveys considered initially as DUAL PURPOSE (only 7%), and taking into account that a number of them came from Greece (22), Spain (7), and Italy (6), it was agreed to consider them within the category of Dairy for the purposes of the project.

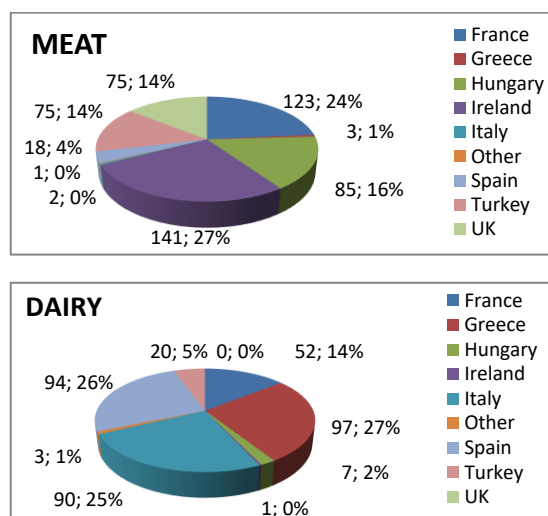
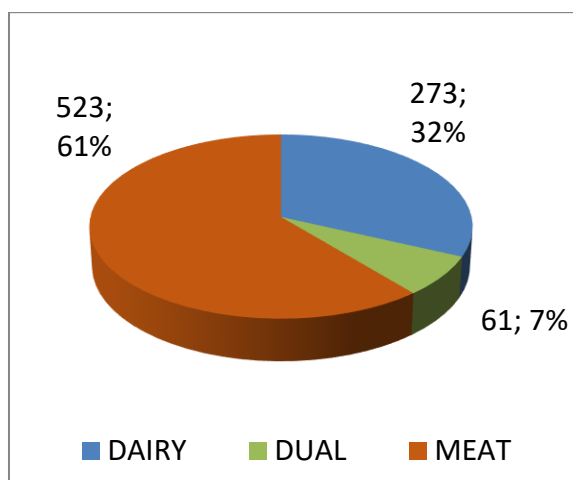


Figure 1. General distribution of the surveys according to the productive orientation, and per country and productive orientation.

In the table below is stated the type of production of system with which the respondents were related. In this case the answers correspond only to the needs of the farmers and shepherd / farm workers who identified themselves with the different production systems proposed.

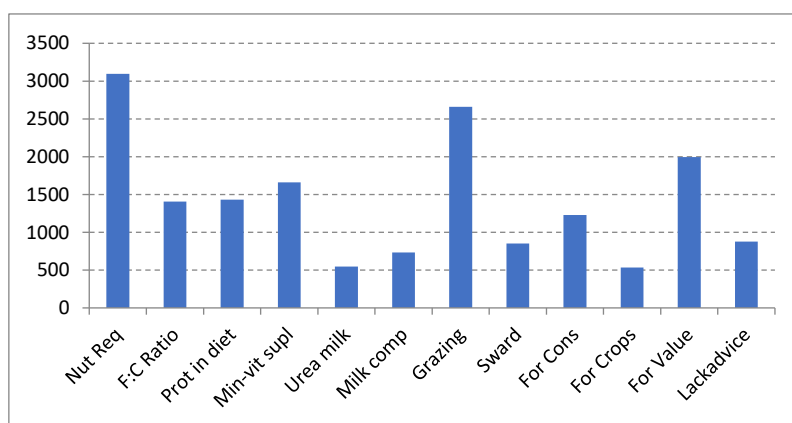
General management	Dairy	Meat	Dual Purpose
Shepherded: Continuous presence of the shepherd with sheep.	4	52	7
Extensive: < 1 ewe/ha	5	50	3
Semi-extensive:			
Dairy: grazing natural grassland plus some supplementation	53	5	13
Meat: 2-4 ewes/ha			
Semi-intensive:			
Dairy: Grazing plus supplementation and winter housing	111	189	16
Meat: 5-11 ewes/ha			
Intensive:			
Dairy: continuously housed (no pasture)	20	35	2
Meat: > 12 ewes/ha			
Total	193	331	41

RESULTS OF THE GENERAL ANALYSIS: TOTAL DATA FROM EU

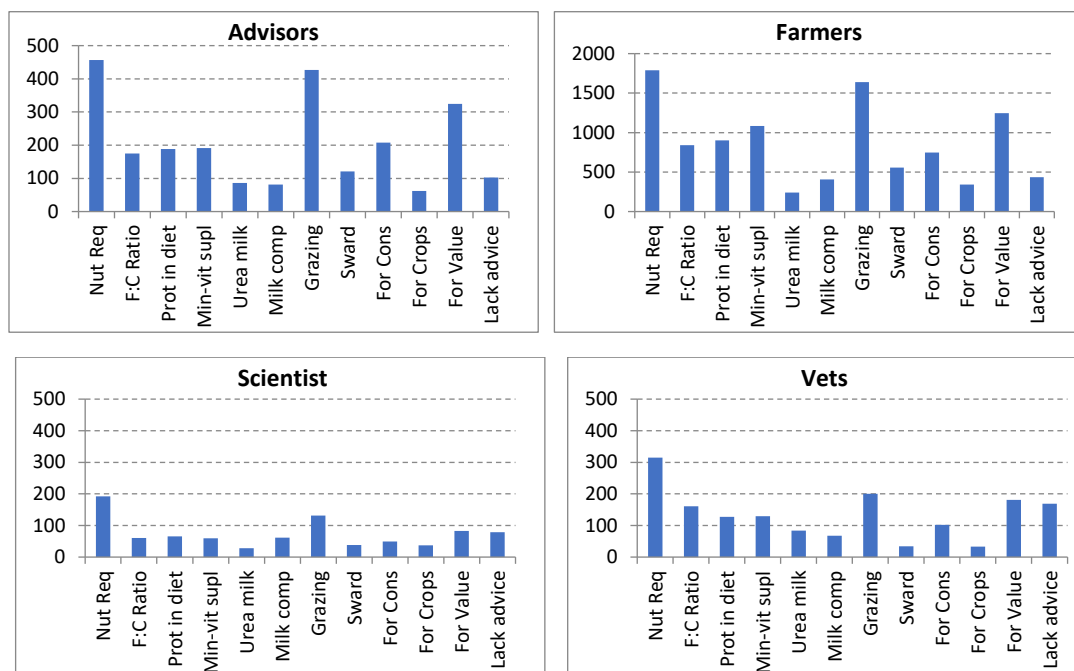
1. MAIN CHALLENGES AND NEEDS FOR THE NUTRITION OF SHEEP:

a. Adult Sheep

The knowledge of nutrition requirements, the management of grasslands and grazing practices, and the feeding value of the forage were identified as the top three key issues regarding the nutrition of adult sheep.

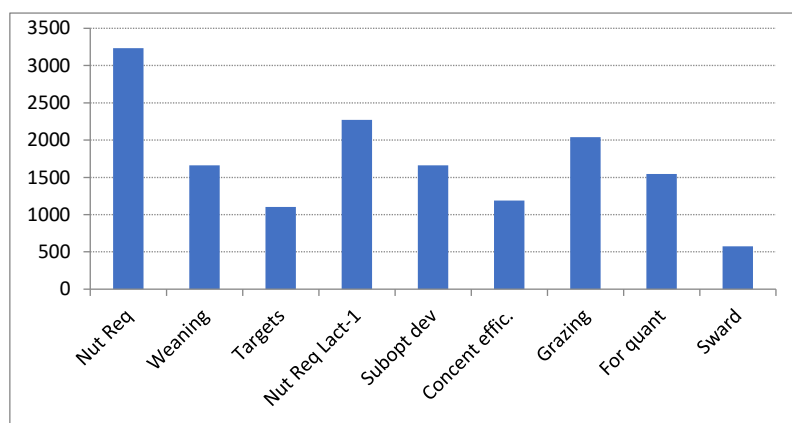


In fact, there was an absolute agreement between farmers, advisors, scientist and vets in the ranking order of these issues.



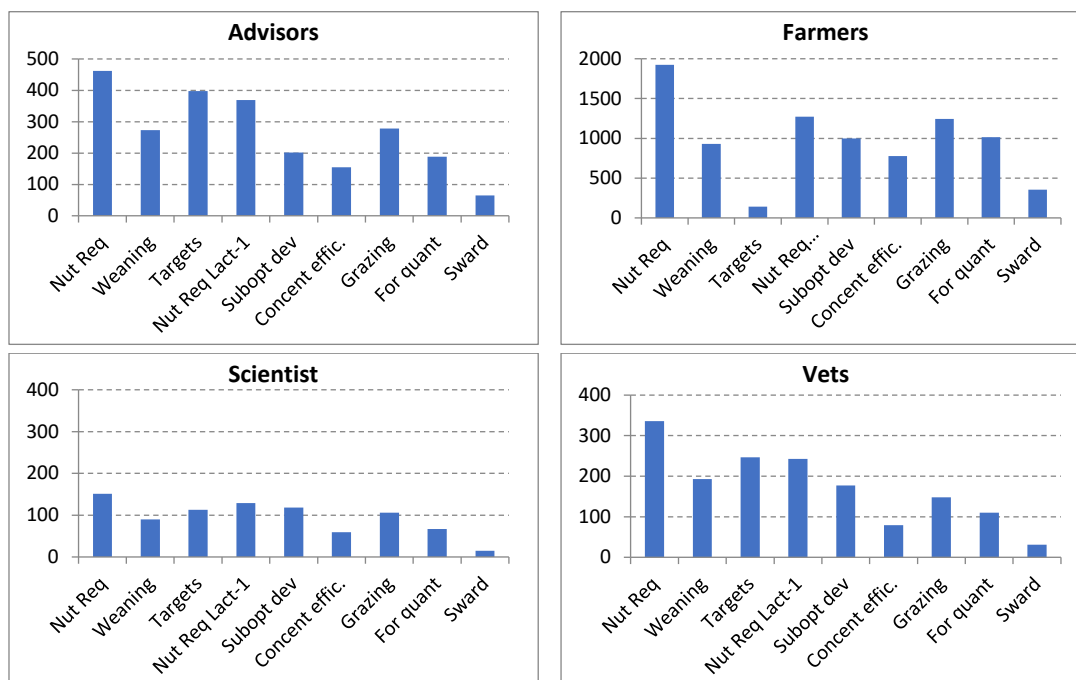
b. Replacement Lambs

The knowledge of the nutrition requirements of the replacement lambs in the different stages of development was cited as the most important need by all the stakeholders, although there were slight differences in the second and third topic depending on the professional profile.



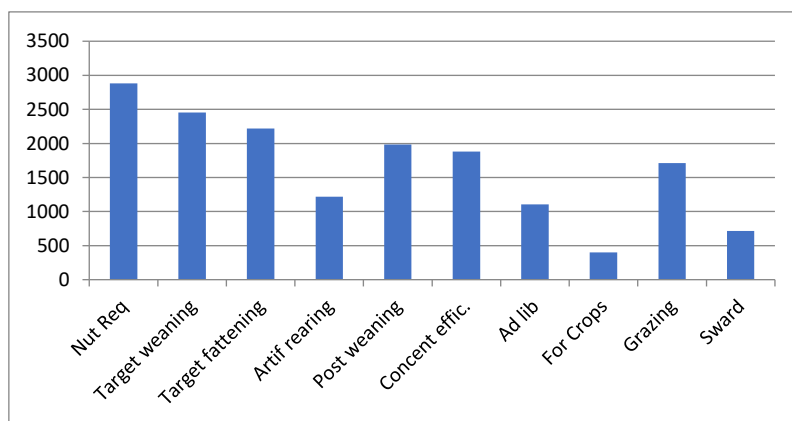
According to the opinion of Advisors and Vets, setting growth targets for 1st lambing at 1 year of age was ranked in the second place, and the nutrition requirements for the 1st lactation in the third. Farmers and Scientists considered the nutrition requirements for the 1st lactation in the second place, although according to farmers the grazing management was cited afterwards, and scientists considered the sub-optimal development of ewes that lambed young.



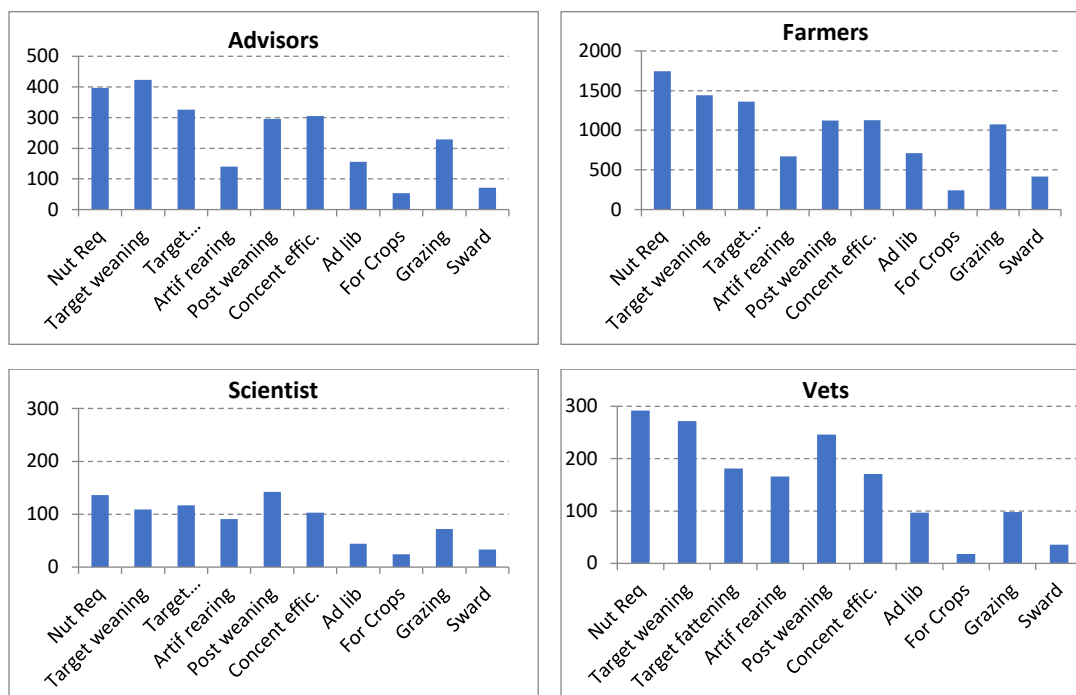


c. Lambs

There was a general agreement between stakeholders about the importance of the knowledge of the nutrition requirements of lambs, since it was ranked in the first place by farmers and vets, and in the second by advisors and scientists.



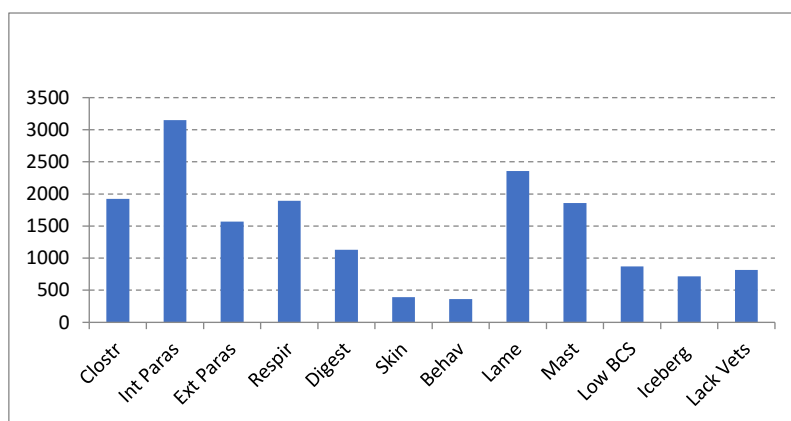
The need of lamb performance targets from birth to weaning was also on considered as one of the most important challenge, since it was pointed out particularly by advisors (1st), farmers and vets (2nd). Then, it was the need of growth targets for fattening lambs (3rd for advisors, farmers and scientist) followed by the post weaning management- adaptation to new feeding regime (1st for scientists and 3rd for vets).



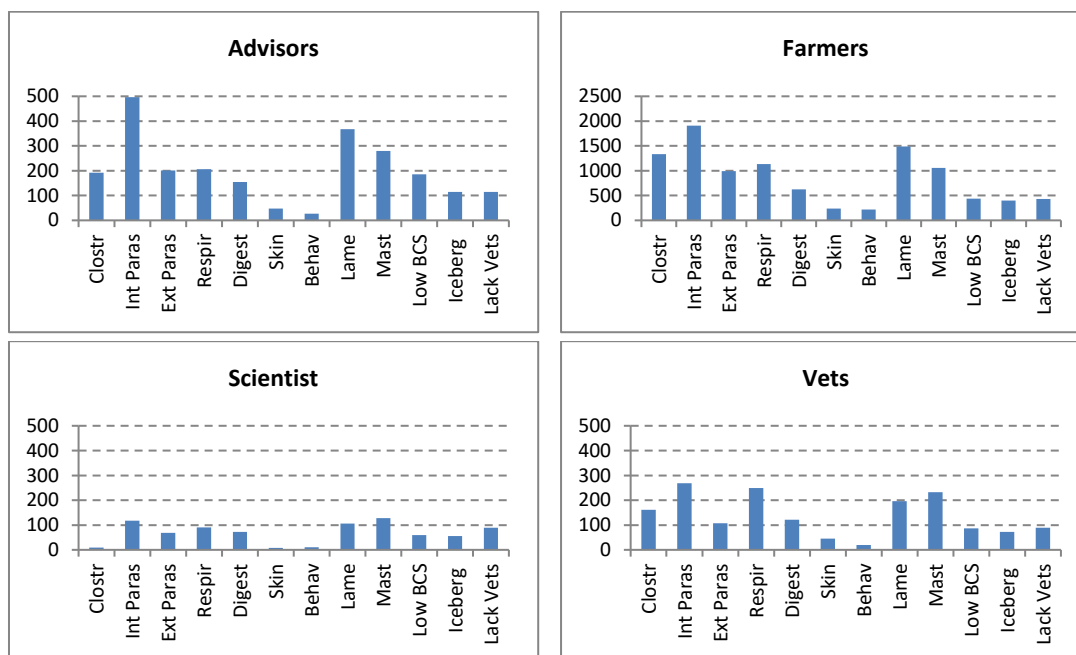
2. MAIN CHALLENGES AND NEEDS FOR THE HEALTH OF SHEEP:

a. Adult Sheep and Replacement lambs

Health issues related to internal parasites was recognized as the main priority, mainly according to the opinion of farmers, advisors, and vets, whereas scientists considered that problems related to mastitis were slightly more important. Lameness, clostridial disease and mastitis were the second, third and fourth in general terms.

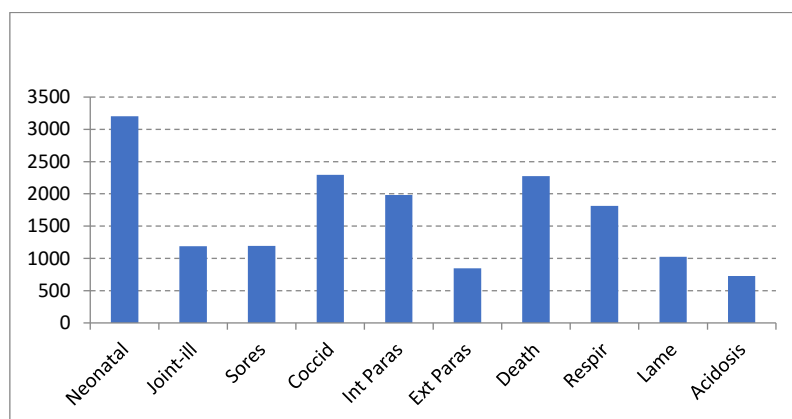


In fact, advisors and farmers agree upon the higher relative importance of internal parasites and lameness. However, whereas farmers consider that clostridial disease, and even respiratory disorders are more important than mastitis, according to the opinion of advisors, mastitis rated in the third position, followed by respiratory disorders and external parasites.

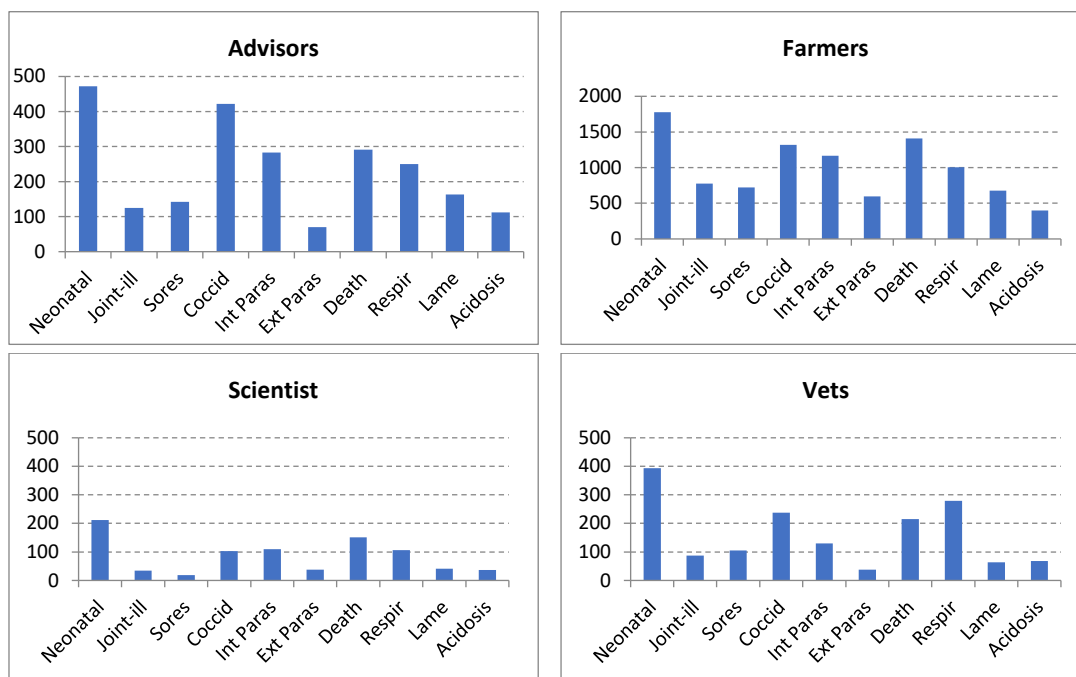


b. Lambs

Neonatal Diseases (e.g. diarrhoea, septicaemia, E. coli, rotavirus, etc.) were clearly recognized by all the stakeholders as the main priority regarding the health issues for lambs. Coccidiosis and the acute death of lambs (due to Enterotoxaemia, Clostridial disease - pulpy kidney, struck, braxy, blackleg, etc.) were the second and third in general terms.



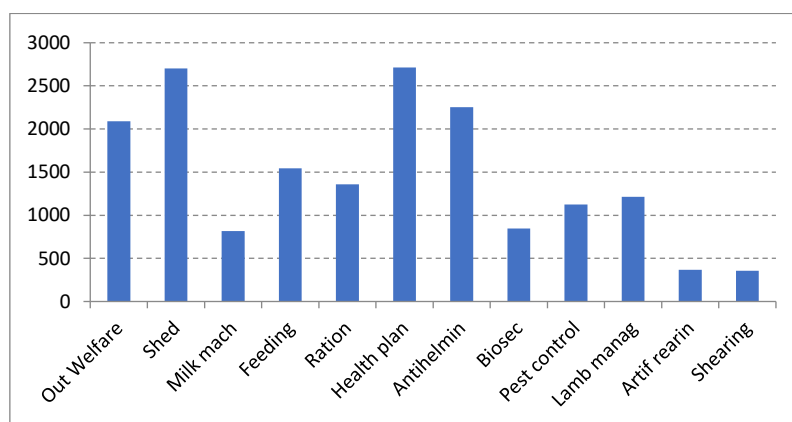
The agreement between advisors and farmers was quite clear in the ranking of these 3 topics as the main needs. However, vets considered that solving respiratory disorders seems to have a slightly higher priority over Coccidiosis (3rd) and the acute death of lambs (4th). As for scientists, they gave a higher importance to the acute death of lambs (2nd), followed by the problems related to other internal parasitism (e.g. gastrointestinal parasites, Cryptosporidiosis, Nematodirus, Haemonchus, Ostertagia, etc.) and the respiratory disorders.

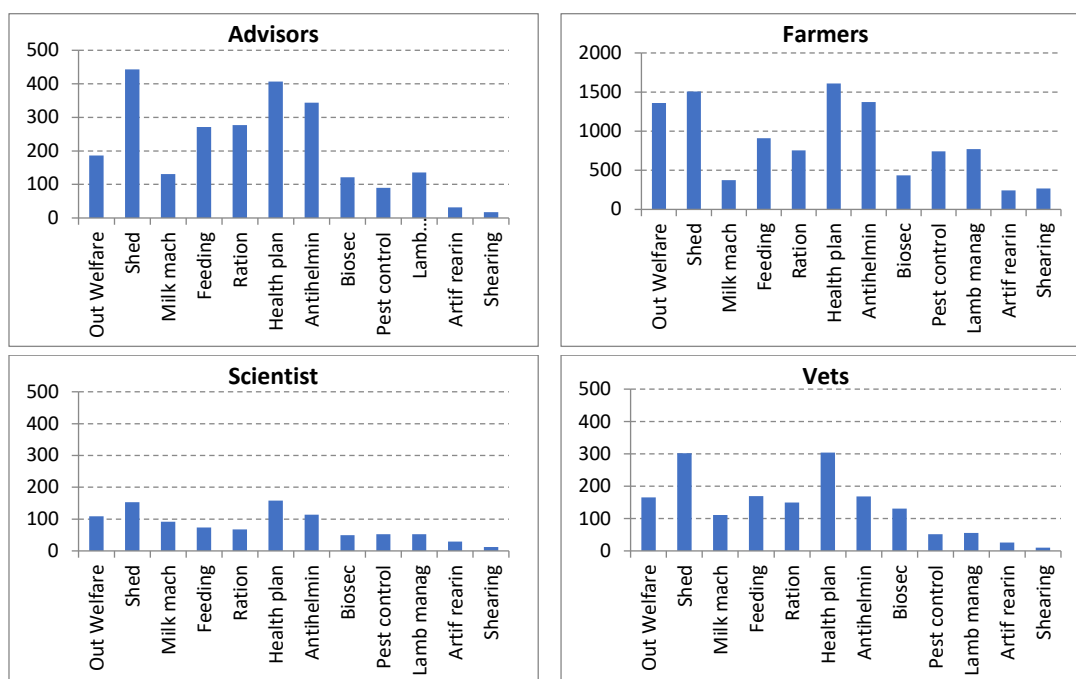


3. MAIN CHALLENGES AND NEEDS FOR MANAGEMENT PRACTICES

The sheep shed management (e.g. ventilation, temperature, space/ewe,...) and the flock health plan (e.g. strategy to avoid contamination, vaccination, health treatments, culling of ewes, shed disinfection, closed flock, common grazing, ...) were clearly recognized by all the stakeholders as the two more relevant management practices.

Then, the issues related to the control of helminthic parasites (e.g. faecal egg count, anthelmintic resistance, grazing management) and the outdoor welfare of the sheep (e.g. shelter, shade, water availability, etc.) were also pointed out by all the stakeholders.





4. INFORMATION SOURCES

Generally speaking, farmers, and particularly dairy sheep farmers, seem to prefer accessing information through face to face communication channels, such as the direct advice provided by advisory services, veterinarians or on-farm opened events. However, meat sheep farmers cited farming press as the main source of information, just as advisors did.

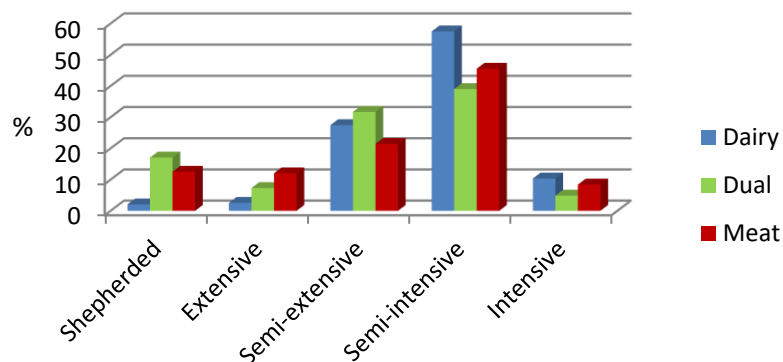
In contrast, scientists and veterinarians prefer to consult the information published in scientific journals, congresses, seminars or workshops, etc.

	TOTAL	FARMERS			TECHNICIANS			
		Total Farmers	MEAT	DAIRY	TOTAL Techn.	Advisors	Vets.	Scientist
Farming press	5038	2967	2354	578	1736	950	360	426
Farming websites	2675	1540	1049	491	988	587	191	210
Scientific articles	3087	927	682	223	1889	639	593	657
Congress/seminars/workshops	3222	1192	830	362	1770	622	571	577
Open days on farm	3170	1947	1485	440	977	537	160	280
Social media (FaceBook, Youtube...)	1446	927	578	340	374	230	81	63
Professional learning	3479	1712	1056	644	1520	756	532	232
Technical advisors/consultants	5100	3428	2295	1123	1372	924	193	255
Veterinarians	5024	3681	2303	1378	1123	637	349	137
Peer to peer (e.g. farmer to farmer)	4183	3101	2156	922	911	508	166	237
Discussion groups	2702	1863	1440	410	720	257	269	194
Technical sales personnel	933	669	413	256	199	81	92	26
Other	260	218	157	61	40	0	40	0

Order of importance within each column: 1st=Red, 2nd=Orange, 3rd=Yellow, 4th=Blue, 5th=Brown.

ANALYSIS PER FARMING SYSTEM

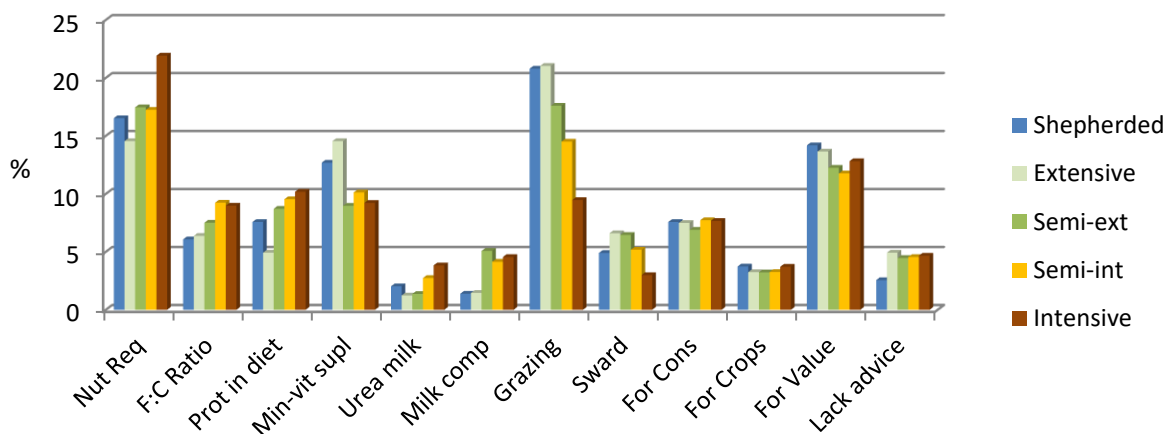
Production systems vary according to production orientation, with a trend towards intensification in flocks dedicated to dairy production vs. meat production and dual purposes, which are more extensive.



1. MAIN CHALLENGES AND NEEDS FOR THE NUTRITION OF SHEEP:

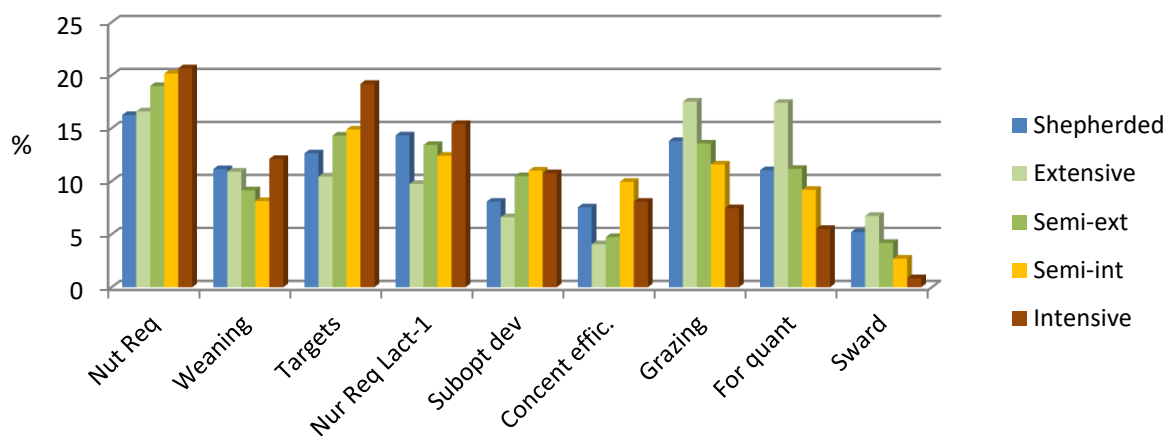
a. Adult Sheep

The systems shepherded, extensive and semi-extensive present greater needs in aspects of grassland and grazing management, while for the semi-intensive and intensive systems their greater needs are the aspects of knowledge of nutrition requirement.



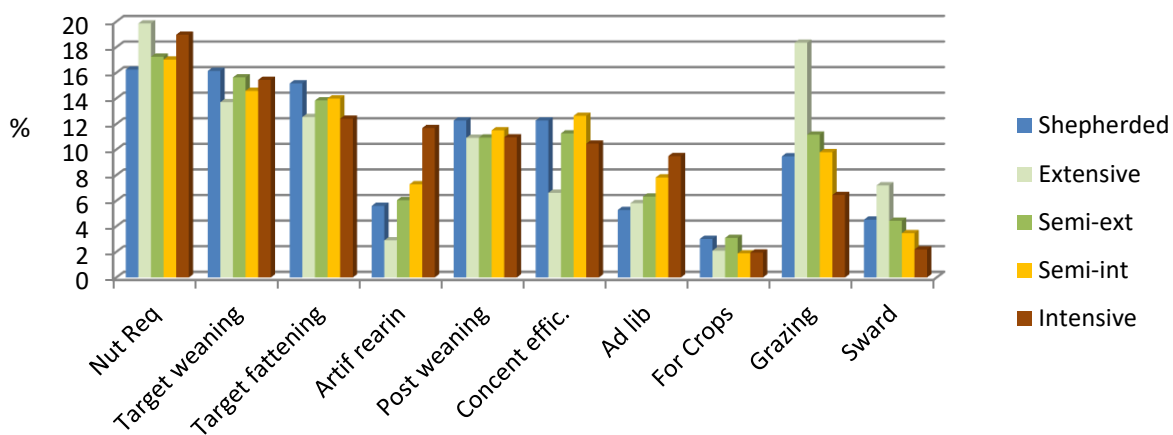
b. Replacement Lambs

Replacement lamb nutrition creates problems for all systems at the knowledge of nutrition requirement level, and shepherded and extensive systems also highlight the need at the level of grassland and grazing management and forage and grass feed value.



c. Lambs

As far as the nutrition of the lambs is concerned, all the systems state that their greatest need is knowledge of nutrition requirement. The demand for solutions to grazing problems comes mainly from extensive systems of meat production.

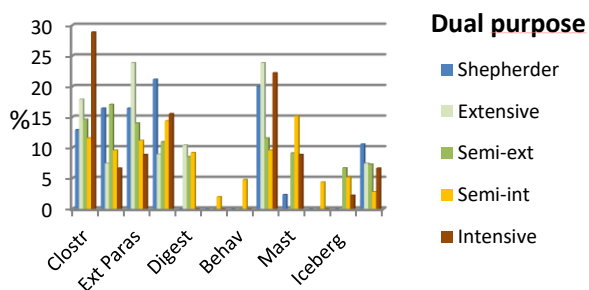
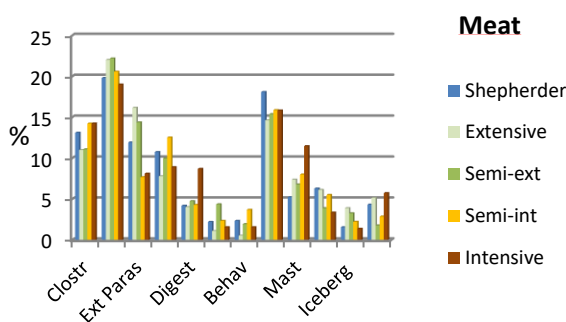
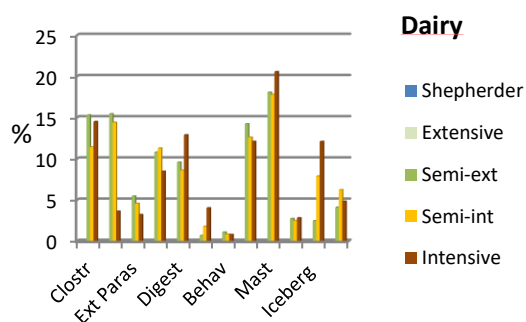
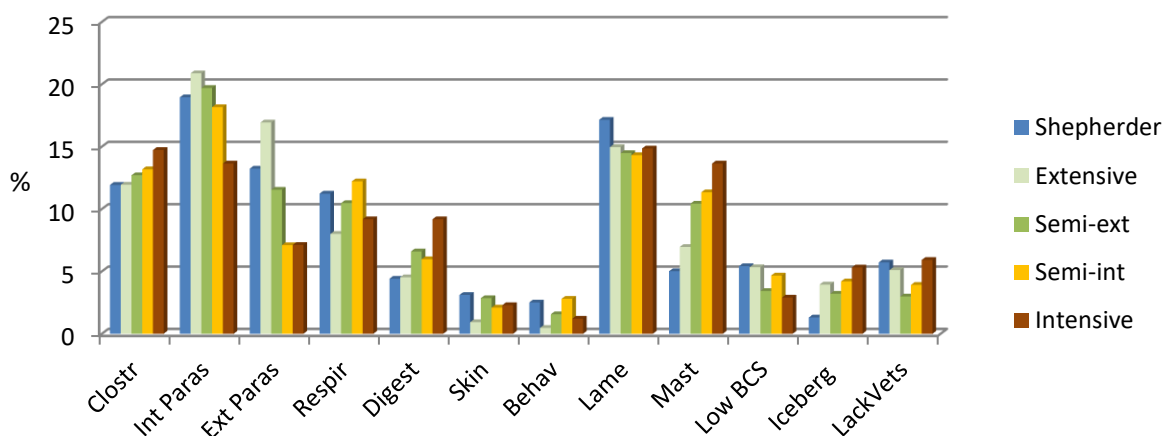


2. MAIN CHALLENGES AND NEEDS FOR THE HEALTH OF SHEEP:

a. Adult Sheep and Replacement lambs

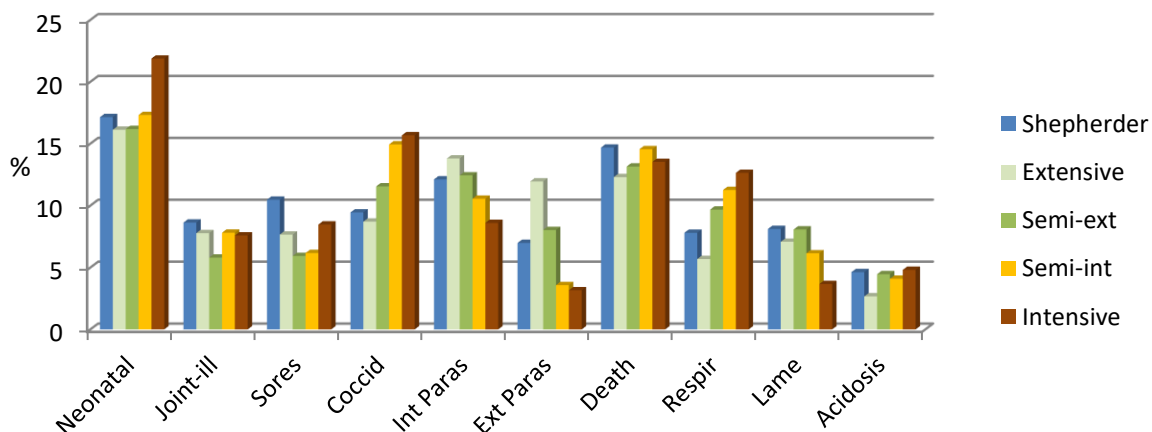
In general, all systems except the intensive ones manage as a main challenge is internal parasites (liver fluke, gastrointestinal, coccidiosis, cryptosporidiosis, worms, etc.), except for the intensive systems, for which the main needs is lameness.

In this case, the productive orientation marks the differences, since for the milk sector the main needs is clinical and subclinical mastitis, while for the meat sector it is the internal parasites, and for those of double purpose, they are all the problems of internal and external parasites, and clostridial disease.



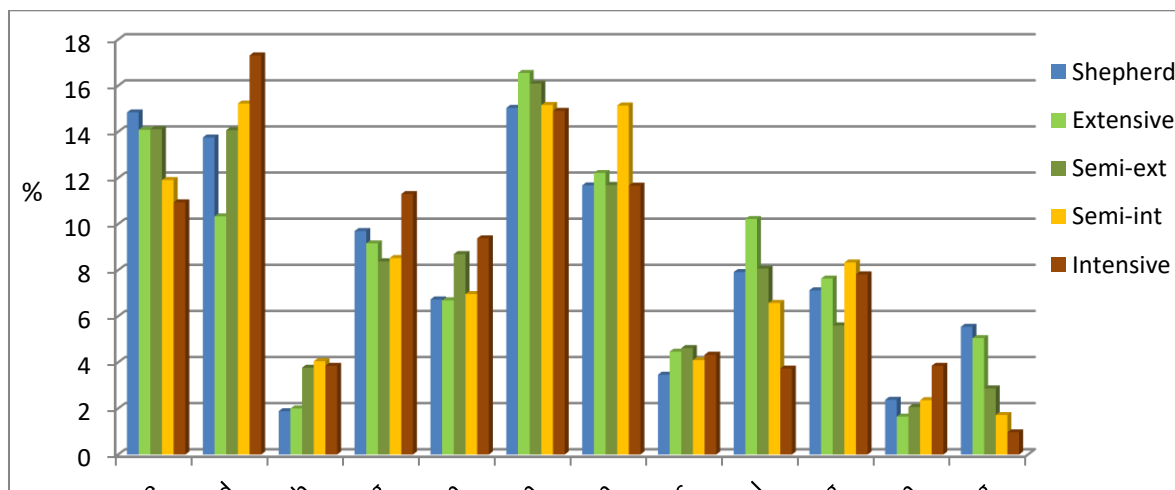
b. Lambs

The main need in terms of the health of the lambs identified in all the production systems and productive sectors is neonatal diseases (diarrhoea, septicaemia, E. coli, rotavirus, etc.).

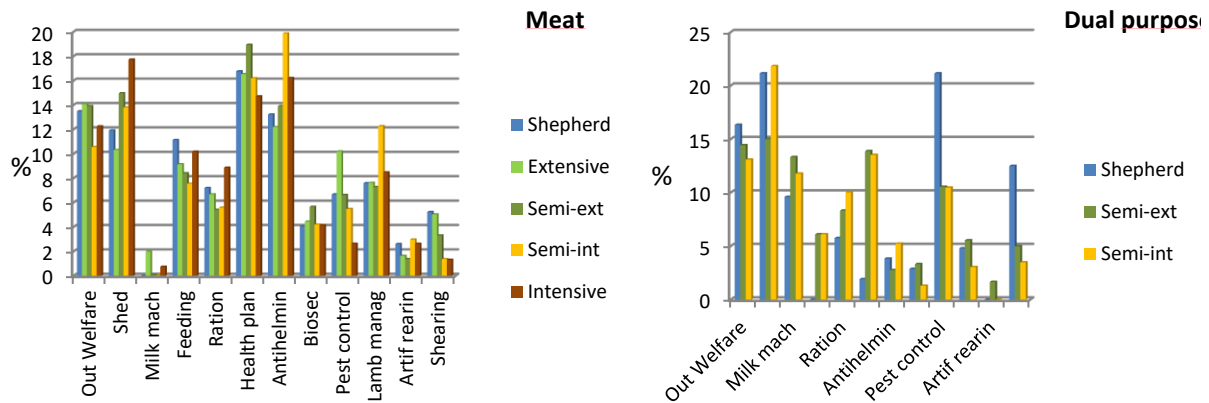


3. MAIN CHALLENGES AND NEEDS FOR MANAGEMENT PRACTICES

The identification of the main needs varies according to the production system, for the more extensive systems, shepherded, extensive and semi-extensive, the health plans are the main need, while for the more intensive systems, semi-intensive and intensive, the facilities, sheep shed management (e.g. shelter, shade, water availability, etc.) are the main challenges.

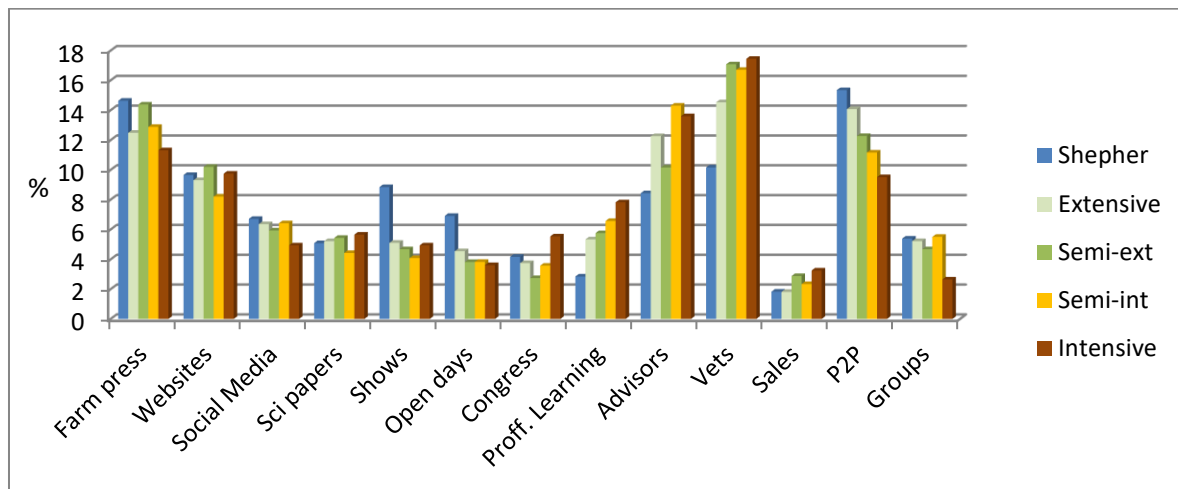


It is interesting to note that the shepherded systems, of double purpose, reflect as a problem the control of pest and predators, and for the semi-intensive systems of meat orientation they manifest as an anthelmintic management as issue.



4. INFORMATION SOURCES

Farmers from semi-extensive, semi-intensive and intensive systems receive information primarily from veterinarians, while for those working in more extensive systems, shepherded and extensive systems, their information pathways are primarily peer to peer (e.g. farmer to farmer) and farm information is equally important.





ANALYSIS PER PRODUCTIVE ORIENTATION

The analysis by productive orientation has been carried out for meat and dairy production, considering those of double purpose in the dairy group, since they mostly came from countries classified as dairy orientation.

Country	SECTOR								
	Dairy	Dual	(%)		Meat	(%)		Non defined	Total
France	44	8	16		123	24		41	216
Greece	75	22	29		3	1		19	119
Hungary	4	3	2		85	16		18	110
Ireland	1	-	-		141	27		21	163
Italy	84	6	27		2	-		48	140
Spain	57	7	19		18	4		35	117
Turkey	6	14	6		75	14		95	190
UK	-	-	-		75	14		23	98
Other	2	1	1		1	-		6	10
	DAIRY				MEAT				
TOTAL	334		100		523	100			1163

When determining the needs by production sector and country, it has been considered taking into account the number of farmers belonging to each of the sectors, as dairy producers, Greece, Italy and Spain, and the rest of the countries France, Hungary, Ireland, Turkey and UK, as meat producing countries.

Country	Dairy		Meat		No sector
	Advisors	Farmers	Advisors	Farmers	Veterinary
France	30	19	42	76	23
Greece	5	80	-	3	11
Hungary	1	6	6	89	1
Ireland	-	1	24	128	2
Italy	32	59		2	21
Spain	7	53	2	16	33
Turkey	2	17	1	72	13



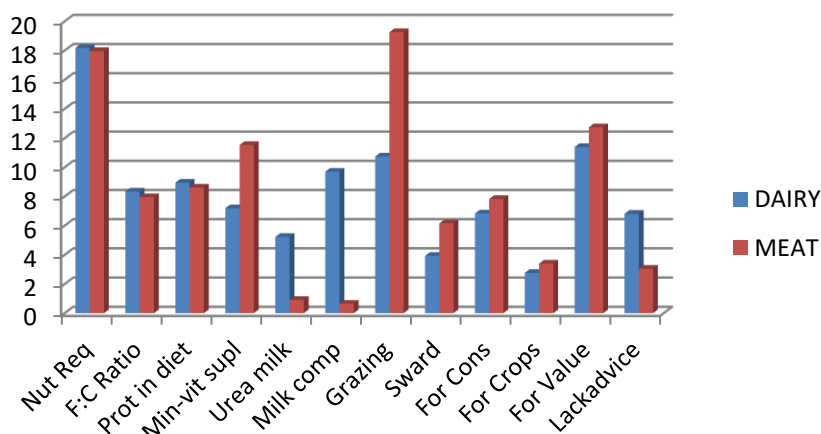
UK	-	-	10	67	5
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This analysis has taken into account those professional profiles that have indicated the sectorial orientation to which they belong (farmers, sheepherders or farm workers) or to which they provide service (advisors, consultant, or technicians). The veterinarians have not defined their services in any sector, they attend to all types of flocks.

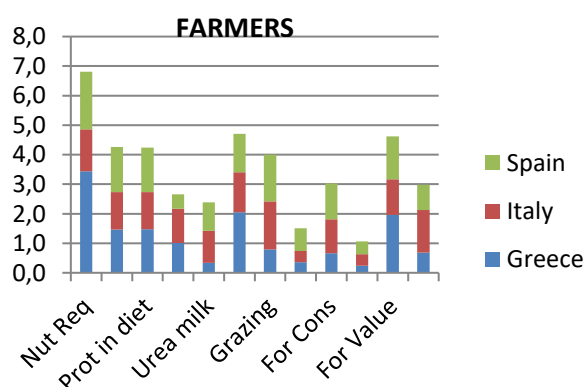
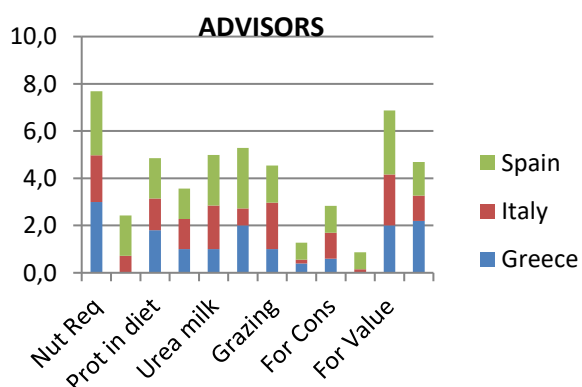
1. MAIN CHALLENGES AND NEEDS FOR THE NUTRITION OF SHEEP:

a. Adult Sheep

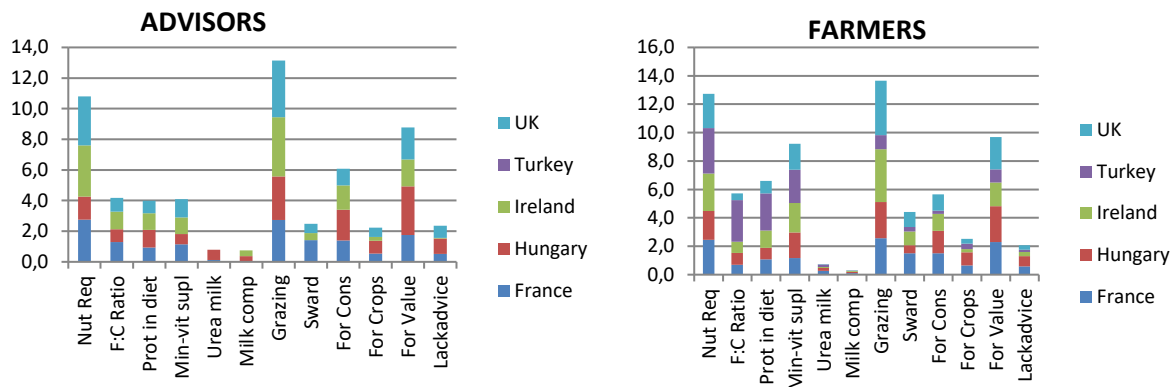
Regarding the nutrition of adult sheep, the main challenges for both sectors are Knowledge of nutrition requirement, grassland and grazing management and forage and grass feed value, although there are small differences in the order of problems depending on the sector.



For the dairy sector the issues are different for advisors and for farmers. For the advisors is an important need urea levels in milk, while for the farmers is more important the milk composition (fat and protein contents).



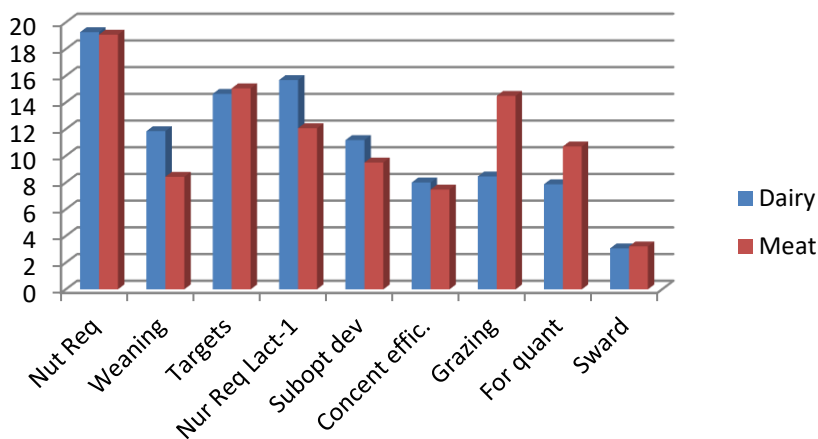
In the meat sector, there are no differences by professional profile overall, but there are differences in importance by country.



The needs detected by the veterinarians follow the same order as the genera issues, Knowledge of nutrition requirement, grassland and grazing management and forage and grass feed value.

b. Replacement lambs

The main nutritional needs of replacement lambs in dairy sheep are knowledge of nutrition requirements in different stages of development, nutrition requirements for first lactation and growth targets for firth lambing at 1 year of age, whereas in sheep meat they are knowledge of nutrition requirements in different stages of development, growth targets for firth lambing at 1 year of age and grazing management.

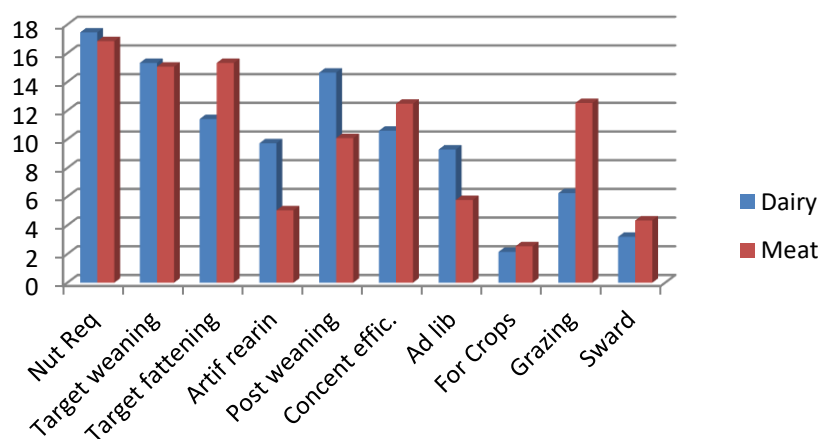


In dairy sheep the needs are the same for advisors and famers, with slight differences in order of need. In sheep meat, the advisors agree that it is also important nutrition requirements for first lactation.

Veterinarians believe that the priority needs are knowledge of nutrition requirements in different stages of development, nutrition requirements for first lactation and growth targets for firth lambing at 1 year of age. They coincide with the needs of the dairy sheep sector.

c. Lambs

The main needs detected with regard to the nutrition of the lambs in the dairy sector are knowledge of nutrition requirement, lamb performance targets from birth to weaning, and post weaning management adaptation to new feeding regime, and in the meat sector are knowledge of nutrition requirement, growth targets for fattening lambs: age and weight at slaughtering and lamb performance targets from birth to weaning.

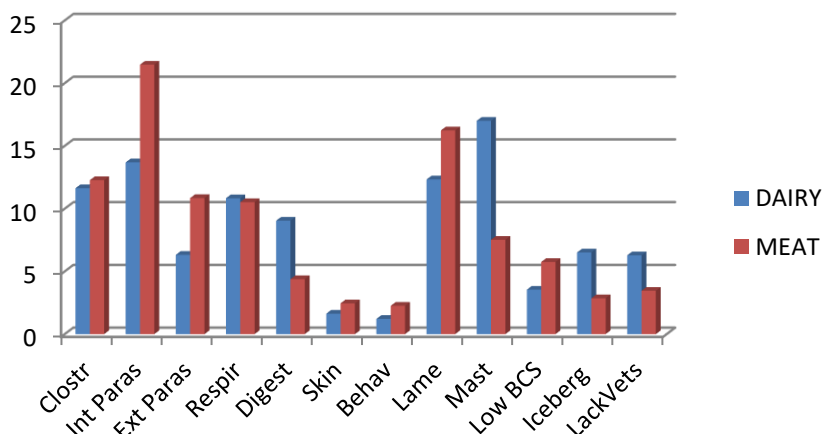


With respect to the needs by professional profile, as much in the case of the one of the dairy sheep as in the one of meat, the three main issues are the same ones for farmers and advisers. There are slight differences between countries. In this case the opinion of veterinarians is the same as that of breeders and advisers.

2. MAIN CHALLENGES AND NEEDS FOR THE HEALTH OF SHEEP:

a. Adult Sheep and Replacement lambs

The biggest challenges for dairy sheep in order of importance are mastitis, clinical and subclinical, internal parasitism, lameness and clostridial disease, while for meat sheep mastitis is not a problem, the other three challenges are the other three challenges are the same in order of priority and as a fourth challenge equate external parasitism and respiratory diseases the priorities and as a fourth challenge equate external parasitism and respiratory diseases.

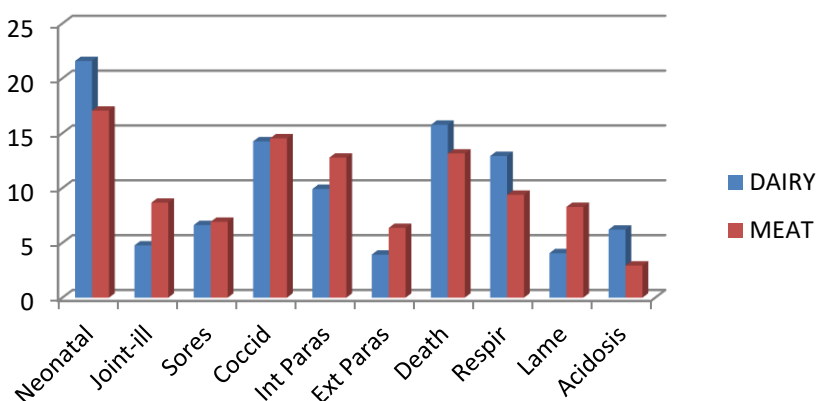


In dairy sheep, farmers and consultants identify the same needs, while in meat sheep, consultants identify as one of the main needs, the poor body condition of the animals in preference to external parasitism, clostridia and respiratory problems.

For veterinarians the main challenges are internal parasitism, mastitis, lameness and respiratory problems.

b. Lambs

Regarding to the health of the lambs, the three main challenges in dairy and meat sheep are neonatal disease, coccidiosis and acute death of lambs.

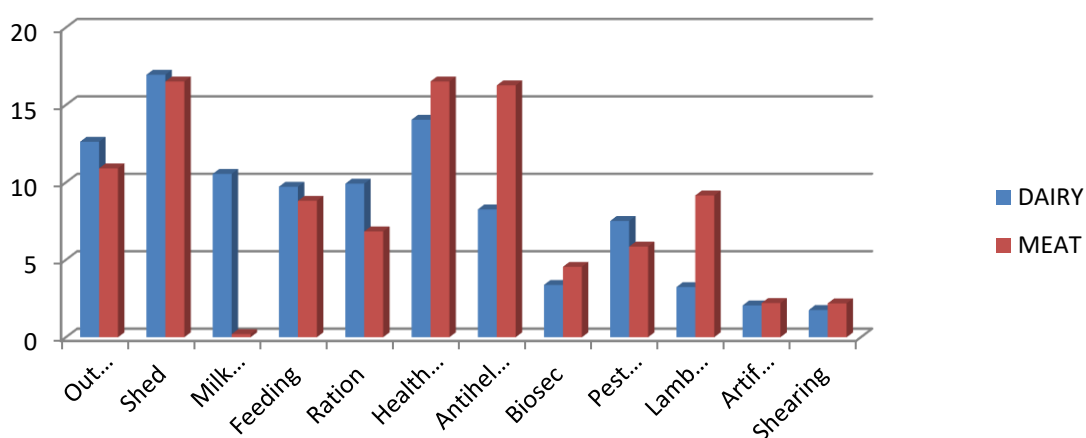


For dairy sheep farmers, respiratory problems are a major challenge as well, as important as coccidiosis.

Veterinarians identify the following as the most important challenges, neonatal disease, respiratory problems, coccidiosis and acute death of lambs.

3. MAIN CHALLENGES AND NEEDS FOR MANAGEMENT PRACTICES

The two main challenges in management practices in dairy and meat sheep are the same, sheep shed management (ventilation, temperature, space/ewe,...) and flock health plan, while in third place in dairy sheep is identified outdoor welfare management and in meat sheep anthelmintic management.



Farmers, advisors and veterinarians identify the same challenges in this section.

AGREEMENT ON NEEDS AFTER DISCUSSION IN NATIONAL WORKSHOPS AND SCIENTIFIC AND TECHNICAL WORKING GROUPS

The results of the rankings achieved from the analysis of the data were presented in each country within the Scientific and Technical Working Groups (STWG) and National Workshops (NW) for further discussion and validation by the participant stakeholders, particularly taking into account the opinion of the farmers.

Finally, there was also a last discussion at an international level in which there were members of the STWG of all the countries participating in the project. The objective was to agree on the main common needs at EU level before presenting them during the Transnational Workshop (TNWS).

The final results of the main needs within each country and in EU are shown in the next tables: the darkest colours of the cells indicate the main needs, and the lighter colours are for the secondary ones. For each table, we also identified some needs which seem not relevant for any country.

	FR	GR	HU	IR	IT	SP	TR	UK
Knowledge of nutrition requirement								
Grassland and grazing management								
Forage feed value (including grass)								
Conserve forage production (hay, silage...)								
Protein concentration in the diet (concentrate + forage)								
Minerals and vitamins supplementation								
Forage : concentrate ratio in the diet								
Urea levels in milk (unbalanced energy /protein ratio in the diet)								
Milk composition (fat and protein content)								
Multi species sward (e.g. plantain, chicory, clover, etc...)								
Forage crops (maize, sorghum, kale, rape, fodder beet, etc...)								
Lack of suitable/impartial advice								

a. Lambs

	FR	GR	HU	IR	IT	SP	TR	UK
Lamb performance targets from birth to weaning								
Post weaning management: adaptation to new feeding regime								



Knowledge of nutrition requirements								
Growth targets for fattening lambs: age and weight at slaughtering								
Concentrate feed efficiency: weight gain / kg concentrate								
Ad libitum concentrate systems								
Grazing management (grazing techniques, grass measurement/assessment, rotation, etc. ...)								
Artificial rearing (Composition of milk, age of weaning, concentrate composition...)								
Multi species sward (e.g. plantain, chicory, clover, etc.)								
Forage crops (maize, sorghum, kale, rape, fodder beet, etc...)								

b. Replacement Lambs

	FR	GR	HU	IR	IT	SP	TR	UK
Growth targets for 1st lambing at 1 year of age								
Knowledge of nutrition requirements in different stages of development								
Weaning transition management								
Nutrition requirements for 1st lactation								
Sub-optimal development of ewes that lambed young								
Grazing management								
Forage and grass availability – quantity								
Multi species sward (e.g. plantain, chicory, clover, etc.)								
Concentrate feed efficiency: weight gain / kg concentrate								





2. MAIN CHALLENGES AND NEEDS FOR HEALTH:

a. Adult Sheep and Replacement Lambs

	FR	GR	HU	IR	IT	SP	TR	UK
Internal parasitism (e.g. Liver Fluke, Gastrointestinal, Haemonchus, Coccidiosis, Cryptosporidiosis, worms, etc.)								
Lameness (e.g. footrot, CODD, scald, etc.)								
Mastitis (clinical and subclinical, high somatic cell count)								
Clostridial disease (e.g. pulpy kidney, braxy, blackleg)								
External parasitism (e.g. scab, lice, ticks, blowfly, mites, etc.)								
Respiratory problems (e.g. pneumonia, coughing)								
Iceberg diseases (e.g. OPA, CLA, Johnes disease, Maedi Visna, Border D.)								
Poor Body Condition								
Abnormal behaviour (e.g. nervous problems, scrapie, etc.)								
Digestive disorders (e.g. diarrhoea, etc.)								
Lack of suitable or advisory services								
<i>Contagious agalactiae</i>								
<i>Control of diseases in North-East cross-border zone</i>								
<i>Blue Tongue</i>								
<i>Zoonosis</i>								
Skin and/or mucosal problems (e.g. abscesses, sores, Ecthyra, Orf)								

b. Lambs

	FR	GR	HU	IR	IT	SP	TR	UK
Neonatal Diseases (e.g. diarrhoea, septicaemia, E. coli, rotavirus, etc.)								
Coccidiosis								
Acute death of lambs (eg. Enterotoxaemia, Clostridial disease - pulpy kidney, struck, braxy, blackleg, etc.)								
Other internal parasitism (e.g. gastrointestinal parasites, Cryptosporidiosis, Nematodirus, Haemonchus, Ostertagia, etc.)								
Respiratory problems (e.g. pneumonia, coughing, breathing noise, etc.)								
Sores and blisters on lips, nose, ears or eyelids – (e.g. Ecthyra, Orf...)								
Lameness (e.g. scald, footrot, shelly hoof, CODD, strawberry foot, etc.)								
Joint ill (e.g. swollen joints, etc.)								
Acidosis (e.g. lambs stop eating, pain, discomfort, etc.)								
External parasitism (e.g. lice, fleas, ticks, flies, etc.)								





3. MANAGEMENT PRACTICES:

	FR	GR	HU	IR	IT	SP	TR	UK
Flock health plan (e.g. strategy to avoid contamination, vaccination, health treatments, culling of ewes, shed disinfection, closed flock, common grazing, ...)								
Outdoor welfare management (shelter, shade, water availability, etc.)								
Sheep shed management (e.g. ventilation, temperature, space/ewe,...)								
Anthelmintic management (e.g. faecal egg count, anthelmintic resistance, grazing management)								
Feeding / distribution management (concentrate + forages, TMR, etc.)								
Milking management (handling and available information)								
Ration formulation (based on forage availability, quality)								
Lamb management (e.g. castration, age of weaning, etc.)								
Biosecurity management								
Pest and predator control (pets, birds, insect, rodent and wild animals)								
Management of artificially reared lambs								
Shearing management (season of shearing, lamb shearing)								



Annex 1: Eurosheep survey

EuroSheep

Survey on needs to improve sheep profitability through health and nutrition

Dear Sir/Madam

The objective of this survey is to obtain and **assess the opinion** of farmers, advisors and other stakeholders within the sheep industry to identify what are the **main challenges and needs** to improve the profitability of sheep production through nutrition, flock health and good management practices.

We would appreciate if you could devote approximately 20 minutes to complete the survey. This survey is the first step of a wider European project called EuroSheep ("European Network for interactive and innovative knowledge exchange on animal health and nutrition between the sheep industry actors and stakeholders") which is funded by the European Union's Horizon 2020 research and innovation programme (Grant agreement N° 863056) and aims to increase sheep profitability. The next step will involve providing solutions to the main challenges and needs identified in this survey

There are no right or wrong answers; it is your opinion we are seeking in this survey.

This project is led by Idele (France), with the collaboration of other R+D centres and organisations from France, Greece, Hungary, Ireland, Italy, UK, Spain and Turkey.

If you wish further information, please contact

UK : Claire Morgan-Davies: claire.morgan-davies@sruc.ac.uk (<mailto:claire.morgan-davies@sruc.ac.uk>).

Ireland : Tim Keady : tim.keady@teagasc.ie (<mailto:tim.keady@teagasc.ie>).

Your participation in this project study is voluntary. Participant's individual data will not be made public. The information gathered will remain confidential and will not be used for other objectives beyond those specific for the EuroSheep project. The global results of this survey will be available publicly.

Clicking on the "next" button below indicates that:

- you have read the above information
- you voluntarily agree to participate

There are 28 questions in this survey.

IDENTIFICATION

Where are you from? *

Choose one of the following answers

Please choose **only one** of the following:

- ☐ France
- ☐ Greece
- ☐ Hungary
- ☐ Ireland
- ☐ Italy
- ☐ Spain
- ☐ UK
- ☐ Turkey

☐ Other**Your profession (Please tick the one that suits you better) ***

Choose one of the following answers

Please choose **only one** of the following:

- ☐ Farmer (farm owner)
- ☐ Shepherd / Farm worker
- ☐ Veterinary practitioner
- ☐ Advisor / consultant
- ☐ Researcher / Scientist
- ☐ Teacher / lecturer
- ☐ Student

☐ Other

What is your main sheep enterprise or your main sheep expertise?

Only answer this question if the following conditions are met:

Answer was 'Researcher / Scientist ' *or* 'Advisor / consultant' *or* 'Shepherd / Farm worker ' *or* 'Farmer (farm owner)' at question '2 [profession]' (Your profession (Please tick the one that suits you better))

Choose one of the following answers

Please choose **only one** of the following:

- ☐ **Meat:** if lambs are slaughtered or sold for finishing (meat is the main product produced)
- ☐ **Dairy:** milk and/or dairy products, and suckling lambs, are the main product marketed.
- ☐ **Dual purpose:** if the income derived from meat and milk/dairy products is similar

MAIN CHALLENGES AND NEEDS REGARDING NUTRITION OF SHEEP

Please select from the following list what you consider are the main issues (challenges and needs) regarding the nutrition of sheep or lambs on your farm (or, if you are not farmer, on the farms systems you are familiar with).

ADULT SHEEP (dry or being milked)

Please select a maximum of 5 options in order of importance. Rank your 5 options from 1 (most important) to 5 (least important).

PLEASE READ UNTIL THE END BEFORE START SCORING

Please fill in from 1 to 5 answers.

Knowledge of nutrition requirement	<input type="text"/>
Forage : concentrate ratio in the diet	<input type="text"/>
Protein concentration in the diet (concentrate + forage)	<input type="text"/>
Minerals and vitamins supplementation	<input type="text"/>
Urea levels in milk (unbalanced energy/protein ratio in the diet)	<input type="text"/>
Milk composition (fat and protein content)	<input type="text"/>
Grassland and grazing management	<input type="text"/>
Multi species sward (e.g. plantain, chicory, clover, etc...)	<input type="text"/>
Conserve forage production (hay, silage...)	<input type="text"/>
Forage crops (maize, sorgho, kale, rape, fodder beet, etc ...)	<input type="text"/>
Forage feed value (including grass)	<input type="text"/>
Lack of suitable/impartial advice	<input type="text"/>

LAMBS (include pre weaning, post weaning, fattening and artificial rearing)

Please select a maximum of 5 options in order of importance. Rank your 5 options from 1 (most important) to 5 (least important).

PLEASE READ UNTIL THE END BEFORE START SCORING

Please fill in from 1 to 5 answers.

Knowledge of nutrition requirements	<input type="text"/>
Lamb performance targets from birth to weaning	<input type="text"/>
Growth targets for fattening lambs: age and weight at slaughter	<input type="text"/>
Artificial rearing (Composition of milk, age of weaning, concentrate composition...)	<input type="text"/>
Post weaning management: adaptation to new feeding regime	<input type="text"/>
Concentrate feed efficiency: weight gain / kg concentrate	<input type="text"/>
Ad libitum concentrate systems	<input type="text"/>
Forage crops (maize, sorghum, kale, rape, fodder beet, etc ...)	<input type="text"/>
Grazing management (grazing techniques, grass measurement/assessment, rotation, etc. ...)	<input type="text"/>
Multi species sward (e.g. plantain, chicory, clover, etc)	<input type="text"/>

REPLACEMENTS (from weaning to the first lactation)

Please select a maximum of 5 options in order of importance. Rank your 5 options from 1 (most important) to 5 (least important).

PLEASE READ UNTIL THE END BEFORE START SCORING

Please fill in from 1 to 5 answers.

Knowledge of nutrition requirements in different stages of development	<input type="text"/>
Weaning transition management	<input type="text"/>
Growth targets for 1st lambing at 1 year of age	<input type="text"/>
Nutrition requirements for 1st lactation	<input type="text"/>
Sub-optimal development of ewes that lambed young	<input type="text"/>
Concentrate feed efficiency: low weight gain / kg concentrate	<input type="text"/>
Grazing management	<input type="text"/>
Forage and grass availability (quantity)	<input type="text"/>
Multi species sward (e.g. plantain, chicory, clover, etc...)	<input type="text"/>

Do you think there are other important issues/challenges/needs/requirements regarding the nutrition of sheep or lambs?

Please write your answer here:

MAIN CHALLENGES AND NEEDS REGARDING HEALTH OF SHEEP

Please select from the following lists what you consider are the main issues (challenges and needs) regarding optimal health status of adult sheep or lambs on your farm (or, if you are not farmer, on the farms systems you are familiar with)

What do you consider to be the 5 most important diseases/health issues in your flock or in sheep flocks in general in your country if you do not have a farm?

Please fill in at most 5 answers

SHEEP and REPLACEMENT

Please select a maximum of 5 options in order of importance. Rank your 5 options from 1 (most important) to 5 (least important).

PLEASE READ UNTIL THE END BEFORE YOU START SCORING

Please fill in from 1 to 5 answers.

Clostridial disease (e.g. pulpy kidney, braxy, blackleg)	<input type="text"/>
Internal parasitism (e.g. Liver Fluke, gastrointestinal parasites, Haemonchus, Coccidiosis, Cryptosporidiosis, etc.)	<input type="text"/>
External parasitism (e.g. scab, lice, ticks, blowfly, mites, etc.)	<input type="text"/>
Respiratory problems (e.g. pneumonia, coughing, etc.)	<input type="text"/>
Digestive disorders (e.g. diarrhoea, etc.)	<input type="text"/>
Skin and/or mucosal problems (e.g. abscesses, sores, Ecthma, Orf.)	<input type="text"/>
Abnormal behaviour (e.g. nervous problems, scrapie, etc.)	<input type="text"/>
Lameness (e.g. footrot, CODD, scald, etc.)	<input type="text"/>
Mastitis (e.g. Clinical and subclinical, high somatic cell count)	<input type="text"/>
Poor body condition	<input type="text"/>
Iceberg diseases (e.g. OPA, CLA, Johnes disease, Maedi Visna, Border disease)	<input type="text"/>
Lack of suitable veterinary or advisory services	<input type="text"/>

LAMBS (include pre weaning, post weaning, fattening and artificial rearing)

Please select a maximum of 5 options in order of importance. Rank your 5 options from 1 (most important) to 5 (least important).

PLEASE READ UNTIL THE END BEFORE YOU START SCORING

Please fill in from 1 to 5 answers.

Neonatal diseases (e.g. diarrhoea, septicaemia, E. coli, rotavirus, etc.)	<input type="text"/>
Joint ill (e.g. swollen joints, etc)	<input type="text"/>
Sores and blisters on the lips, nose, ears and/or eyelids (e.g. Ectyma, Orf...)	<input type="text"/>
Coccidiosis	<input type="text"/>
Other internal parasitism (e.g. gastrointestinal parasites, Cryptosporidiosis, Nematodirus, Haemonchus, Ostertagia, etc.)	<input type="text"/>
External parasitism (e.g. lice, fleas, ticks, flies, etc.)	<input type="text"/>
Acute death of lambs (e.g. Enterotoxaemia, Clostridial disease - pulpy kidney, struck, braxy, blackleg, etc.)	<input type="text"/>
Respiratory problems (e.g. nasal secretion, coughing, breathing noise, pneumonia, etc.)	<input type="text"/>
Lameness (e.g. scald, footrot, shelly hoof, CODD, strawberry foot, etc.)	<input type="text"/>
Acidosis (e.g. lambs stop eating, pain, discomfort, etc.)	<input type="text"/>

Do you think there are other important issues/challenges/needs/requirements regarding the health of sheep or lambs?

Please write your answer here:

MAIN CHALLENGES AND NEEDS REGARDING MANAGEMENT OF NUTRITION AND HEALTH OF SHEEP

Please select from the following list what you consider are the main issues (challenges and needs) regarding management of nutrition or health of adult sheep or lambs on your farm (or, if you are not farmer, on the farms systems you are familiar with)

MANAGEMENT ISSUES

Please select a maximum of 5 options in order of importance. Rank your 5 options from 1 (most important) to 5 (least important).

PLEASE READ UNTIL THE END BEFORE START SCORING

Please fill in from 1 to 5 answers.

Outdoor welfare management (e.g. water availability, shelter, shade, etc.)	<input type="text"/>
Sheep shed management (e.g. ventilation, temperature, space/ewe)	<input type="text"/>
Milking machine management	<input type="text"/>
Feeding / distribution management (e.g. concentrate + forages, TMR, etc...)	<input type="text"/>
Ration formulation (based on forage availability, quality)	<input type="text"/>
Flock health plan (e.g. strategy to avoid contamination, vaccination, health treatments, culling of ewes, shed disinfection, closed flock, common grazing, ...)	<input type="text"/>
Anthelmintic management (e.g. faecal egg count, anthelmintic resistance, grazing management)	<input type="text"/>
Biosecurity management	<input type="text"/>
Pest and predator control (e.g. pets, birds, insect, rodent and wild animals)	<input type="text"/>
Lamb management (eg. castration, age of weaning, etc.)	<input type="text"/>
Management of artificially reared lambs	<input type="text"/>
Shearing management (season of shearing, lamb shearing)	<input type="text"/>

Any other important practice you would like to point out that has not been listed above?

Please write your answer here:

MAIN WAYS TO GET INFORMED ON SHEEP PRODUCTION

Please select the main **INFORMATION SOURCES** that you use to get information on sheep nutrition or health and rank them in order of importance (1 is the most important)

Please fill in at least one answer

Farming press	<input type="text"/>
Farming websites	<input type="text"/>
Social media: Whatsapp, Facebook, Twitter, YouTube	<input type="text"/>
Scientific articles	<input type="text"/>
Sheep and Agricultural shows	<input type="text"/>
Open days on farm	<input type="text"/>
Congress/seminars/workshops	<input type="text"/>
Professional learning	<input type="text"/>
Technical advisors/consultant	<input type="text"/>
Veterinarians	<input type="text"/>
Technical sales personnel	<input type="text"/>
Peer to peer (e.g. farmer to farmer)	<input type="text"/>
Discussion groups	<input type="text"/>

Do you think there are other important information source that you use we could have forgotten?

Please write your answer here:

Additionalnna information

What are the main ewe breeds in your flock? (descending order) (e.g. Suffolk, Charollais x Texel)

Only answer this question if the following conditions are met:

Answer was 'Shepherd / Farm worker ' *or* 'Farmer (farm owner)' at question '2 [profession]' (Your profession (Please tick the one that suits you better))

Please write your answer here:

Sheep farming system you are most familiar with *

Check all that apply

Please choose **all** that apply:

☐ **Shepherded:** Continuous presence of the shepherd with the sheep.

☐ **Extensive:** ≤ 1 ewe/ha

☐

Semi-extensive:

Dairy sheep: grazing natural grassland plus some supplementation

Meat sheep: 2-4 ewes/ha

☐

Semi-intensive:

Dairy sheep: Grazing plus supplementation and winter housing

Meat sheep: 5-11 ewes/ha

☐

Intensive:

Dairy sheep: continuously housed (no pasture)

Meat sheep: > 12 ewes/ha

Do you practice transhumance?

Only answer this question if the following conditions are met:

Answer was 'Other' *or* 'Turkey' *or* 'Spain' *or* 'Italy' *or* 'Hungary' *or* 'Greece' *or* 'France' at question '1 [country]' (Where are you from?) *and* Answer was 'Farmer (farm owner)' at question '2 [profession]' (Your profession (Please tick the one that suits you better))

Please choose **only one** of the following:

☐ Yes

☐ No

What is your flock size (number of ewes joined)?

Only answer this question if the following conditions are met:

Answer was 'Shepherd / Farm worker ' *or* 'Farmer (farm owner)' at question '2 [profession]' (Your profession (Please tick the one that suits you better))

Only numbers may be entered in this field.

Please write your answer here:

What is your flock productivity (number of lambs reared/ewe joined)?

Only answer this question if the following conditions are met:

Answer was 'Farmer (farm owner)' at question '2 [profession]' (Your profession (Please tick the one that suits you better))

Choose one of the following answers

Please choose **only one** of the following:

- ☐ <1
- ☐ 1.01 - 1.20
- ☐ 1.21 – 1.40
- ☐ 1.41 – 1.60
- ☐ 1.61 – 1.80
- ☐ 1.81 – 2.00
- ☐ >2.01
- ☐ I don't know

What is your flock productivity (litres of milk / ewe lambled or milked)?

Only answer this question if the following conditions are met:

Answer was 'Shepherd / Farm worker ' *or* 'Farmer (farm owner)' at question '2 [profession]' (Your profession (Please tick the one that suits you better)) *and* Answer was '**Dual purpose**: if the income derived from meat and milk/dairy products is similar' *or* '**Dairy**: milk and/or dairy products, and suckling lambs, are the main product marketed.' at question '3 [sector]' (What is your main sheep enterprise or your main sheep expertise?)

Choose one of the following answers

Please choose **only one** of the following:

- ☐ <100 litres
- ☐ 101-150
- ☐ 151-200
- ☐ 201-250
- ☐ 251-300
- ☐ 301 - 350
- ☐ 351-400
- ☐ >401
- ☐ I don't know

What is your farm area (ha)?

Only answer this question if the following conditions are met:

Answer was 'Farmer (farm owner)' at question '2 [profession]' (Your profession (Please tick the one that suits you better))

Only numbers may be entered in this field.

Please write your answer here:

Is your flock organic?

Only answer this question if the following conditions are met:

Answer was 'Shepherd / Farm worker ' *or* 'Farmer (farm owner)' at question '2 [profession]' (Your profession (Please tick the one that suits you better))

Please choose **only one** of the following:

☐ Yes

☐ No

MANY THANKS

Once we have analysed all the answers, if you wish to receive a brief report and further information on EuroSheep activities (e.g. National and International workshops), please enter your email below:

Please write your answer here:

Many thanks for taking the time to do this survey. If you have any further comment, please use the space below:

Please write your answer here:

WELL DONE! You will finish the survey!!

*If you think that one or more colleagues of yours would be interested in completing this survey, please do not **hesitate to forward them the link.***

The next national workshops in Scotland (UK) will be held in the Summer once the COVID-19 restrictions are lifted. The first international workshop is planned to be held in Scotland later in the year. If you're interested, please contact us

Contact email:

UK : claire.morgan-davies@sruc.ac.uk (<mailto:claire.morgan-davies@sruc.ac.uk>) or poppy.frater@sac.co.uk (<mailto:poppy.frater@sac.co.uk>).

Only answer this question if the following conditions are met:

Answer was 'UK' at question '1 [country]' (Where are you from?)

WELL DONE! You will finish the survey!!

*If you think that one or more colleagues of yours would be interested in completing this survey, please do not **hesitate to forward them the link.***

The next national workshops will be held in the Summer once the COVID-19 restrictions are lifted. The first international workshop is planned to be held in Scotland later in the year. If you're interested, please contact us

Contact email:

Ireland : ([http://](http://tim.keady@teagasc.ie) tim.keady@teagasc.ie)tim.keady@teagasc.ie
([http://](http://tim.keady@teagasc.ie) tim.keady@teagasc.ie)

Only answer this question if the following conditions are met:

Answer was 'Ireland' at question '1 [country]' (Where are you from?)

WELL DONE! You will finish the survey!!

*If you think that one or more colleagues of yours would be interested in completing this survey, please do not **hesitate to forward them the link.***

The next national workshops in France will be held in the Summer once the COVID-19 restrictions are lifted. The first international workshop is planned to be held in Scotland later in the year. If you're interested, please contact us

Contact email: pierre-guillaume.grisot@idele.fr

Only answer this question if the following conditions are met:

Answer was 'Other' at question '1 [country]' (Where are you from?)

Submit your survey.

Thank you for completing this survey.



Annex 2: table of needs proposed to answerers

Need regarding Nutrition of Sheep 1	Knowledge of nutrition requirement
Need regarding Nutrition of Sheep 2	Forage : concentrate ratio in the diet
Need regarding Nutrition of Sheep 3	Protein concentration in the diet (concentrate + forage)
Need regarding Nutrition of Sheep 4	Minerals and vitamins supplementation
Need regarding Nutrition of Sheep 5	Urea levels in milk - unbalanced energy /protein ratio in the diet
Need regarding Nutrition of Sheep 6	Milk composition (fat and protein content)
Need regarding Nutrition of Sheep 7	Grassland and grazing management
Need regarding Nutrition of Sheep 8	Multi species sward - e.g. plantain, chicory, clover, etc...
Need regarding Nutrition of Sheep 9	Conserve forage production - hay, silage...
Need regarding Nutrition of Sheep 10	Forage crops - maize, sorghum, kale, rape, fodder beet, etc...
Need regarding Nutrition of Sheep 11	Forage feed value
Need regarding Nutrition of Sheep 12	Lack of suitable/impartial advice
Need regarding Nutrition of Lambs 1	Knowledge of nutrition requirements
Need regarding Nutrition of Lambs 2	Lamb performance targets from birth to weaning
Need regarding Nutrition of Lambs 3	Growth targets for fattening lambs: age and weight at slaughtering
Need regarding Nutrition of Lambs 4	Artificial rearing (Composition of milk, age of weaning, concentrate composition...
Need regarding Nutrition of Lambs 5	Post weaning management: adaptation to new feeding regime
Need regarding Nutrition of Lambs 6	Concentrate feed efficiency: weight gain / kg concentrate
Need regarding Nutrition of Lambs 7	Ad libitum concentrate systems
Need regarding Nutrition of Lambs 8	Forage crops (maize, sorghum, kale, rape, fodder beet,
Need regarding Nutrition of Lambs 9	Grazing management (grazing techniques, grass measurement/assessment, rotation, etc.
Need regarding Nutrition of Lambs 10	Multi species sward (e.g. plantain, chicory, clover, etc.
Need regarding Nutrition of Replacement 1	Knowledge of nutrition requirements in different stages of development
Need regarding Nutrition of Replacement 2	Weaning transition management
Need regarding Nutrition of Replacement 3	Growth targets for 1st lambing at 1 year of age
Need regarding Nutrition of Replacement 4	Nutrition requirements for 1st lactation
Need regarding Nutrition of Replacement 5	Sub-optimal development of ewes that lambed young
Need regarding Nutrition of Replacement 6	Concentrate feed efficiency: low weight gain / kg
Need regarding Nutrition of Replacement 7	Grazing management
Need regarding Nutrition of Replacement 8	Forage and grass availability – quantity
Need regarding Nutrition of Replacement 9	Multi species sward (e.g. plantain, chicory, clover, etc...
Need regarding Health of Sheep 1	Clostridial disease - e.g. pulpy kidney, braxy, blackleg
Need regarding Health of Sheep 2	Internal parasitism
Need regarding Health of Sheep 3	External parasitism
Need regarding Health of Sheep 4	Respiratory disorders





Need regarding Health of Sheep 5	Digestive disorders
Need regarding Health of Sheep 6	Skin and/or mucosal problems
Need regarding Health of Sheep 7	Abnormal Behaviour
Need regarding Health of Sheep 8	Lameness
Need regarding Health of Sheep 9	Mastitis
Need regarding Health of Sheep 10	Poor Body Condition
Need regarding Health of Sheep 11	Iceberg diseases
Need regarding Health of Sheep 12	Lack of veterinary services
Need regarding Health of Lambs 1	Neonatal Diseases
Need regarding Health of Lambs 2	Joint ill - e.g. swollen joints, etc.
Need regarding Health of Lambs 3	Sores and blisters on the lips, nose, ears and/or eyelids - e.g. Ectyma, Orf...
Need regarding Health of Lambs 4	Coccidiosis
Need regarding Health of Lambs 5	Other internal parasitism
Need regarding Health of Lambs 6	External parasitism
Need regarding Health of Lambs 7	Acute death of lambs
Need regarding Health of Lambs 8	Respiratory problems
Need regarding Health of Lambs 9	Lameness
Need regarding Health of Lambs 10	Acidosis
Management issue 1	Outdoor welfare management
Management issue 2	Sheep shed management
Management issue 3	Milking machine management
Management issue 4	Feeding / distribution management (e.g. concentrate + forages, TMR, etc.
Management issue 5	Ration formulation - based on forage availability, quality
Management issue 6	Flock health plan
Management issue 7	Anthelmintic management
Management issue 8	Biosecurity management
Management issue 9	Pest and predator control
Management issue 10	Lamb management
Management issue 11	Management of artificially reared lambs
Management issue 12	Shearing management - season of shearing, lamb shearing
Information source 1	Farming press
Information source 2	Farming websites
Information source 3	Social Media: whatsapp, facebook, twitter, youtube..
Information source 4	Scientific papers
Information source 5	Sheep and agricultural shows
Information source 6	Open days on farm
Information source 7	Congress, seminars, workshops
Information source 8	Professional learning
Information source 9	Technical advisors/consultant
Information source 10	Veterinarians
Information source 11	Technical sales
Information source 12	Peer to peer - e.g. farmer to farmer
Information source 13	Discussion groups

