



Overview of milk recording and recording devices in sheep and goats in Italy

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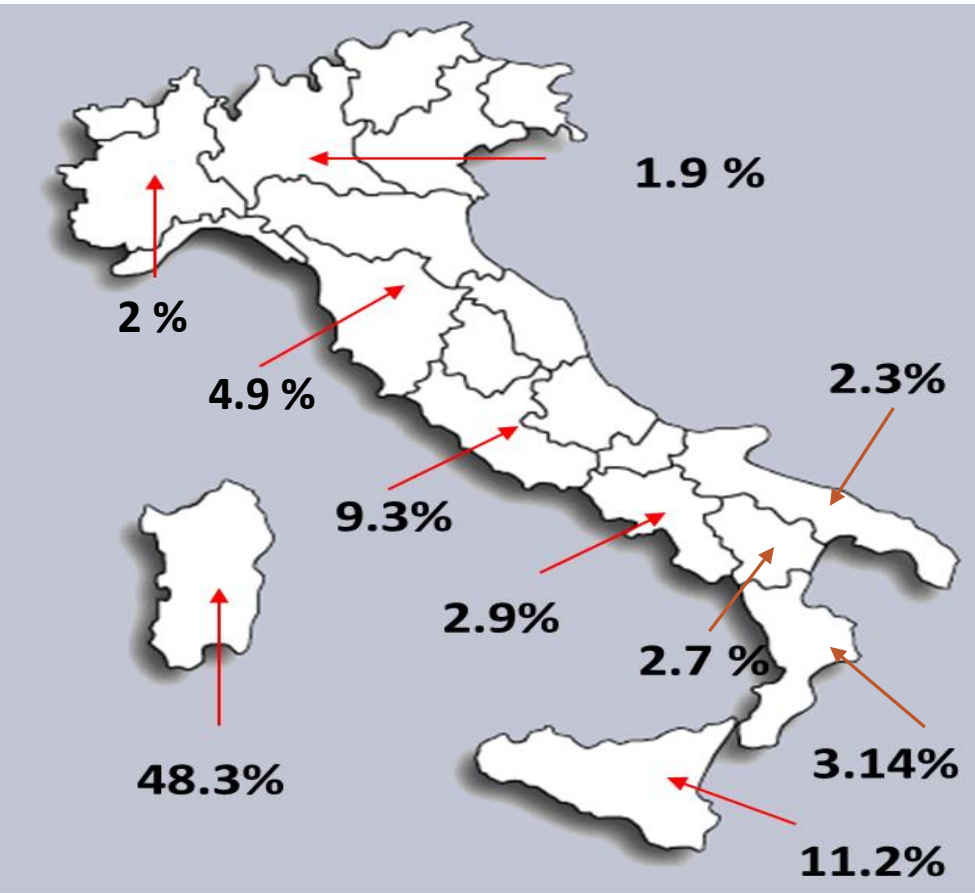
Sheep heads (Dec. 31st, 2022) : **5.896.943**

Source: *Sistema Informativo veterinario (BDN)*
Italian Ministry for Health

Sheep flocks (Dec. 31st, 2022): **81.262**

Sheep breeds : **57 conservation, 10 selection**

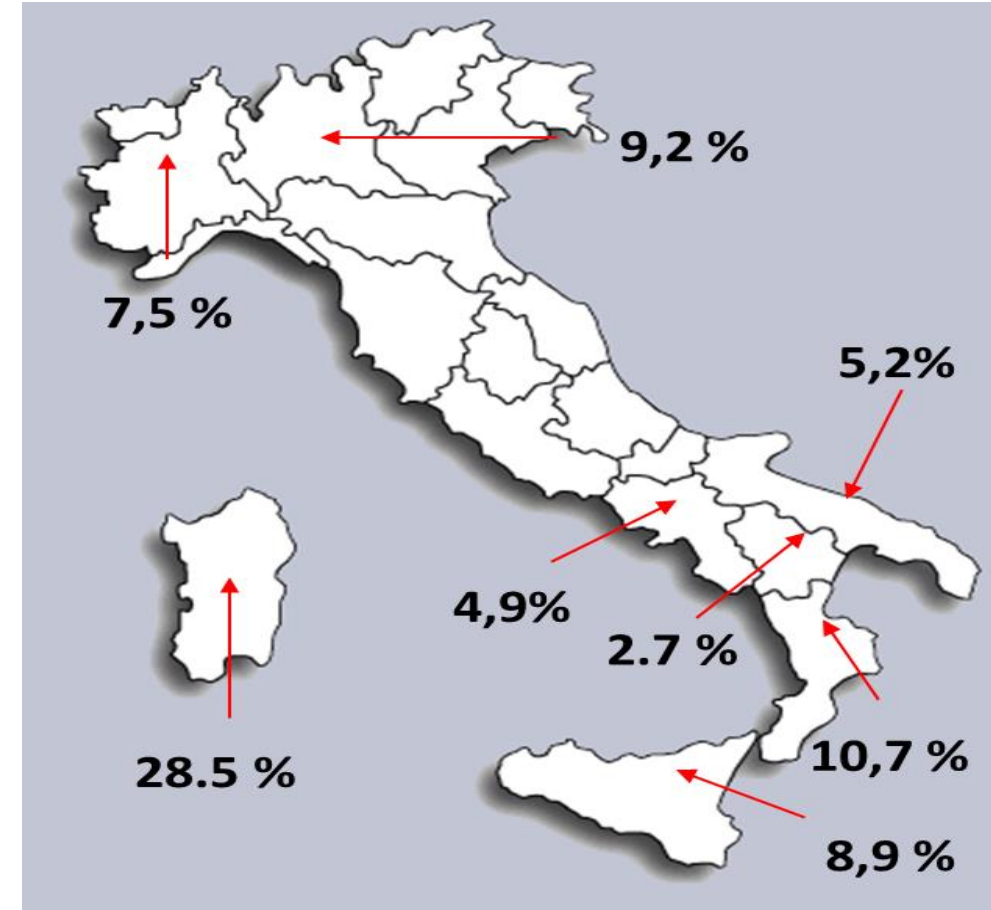
Source: ASSONAPA



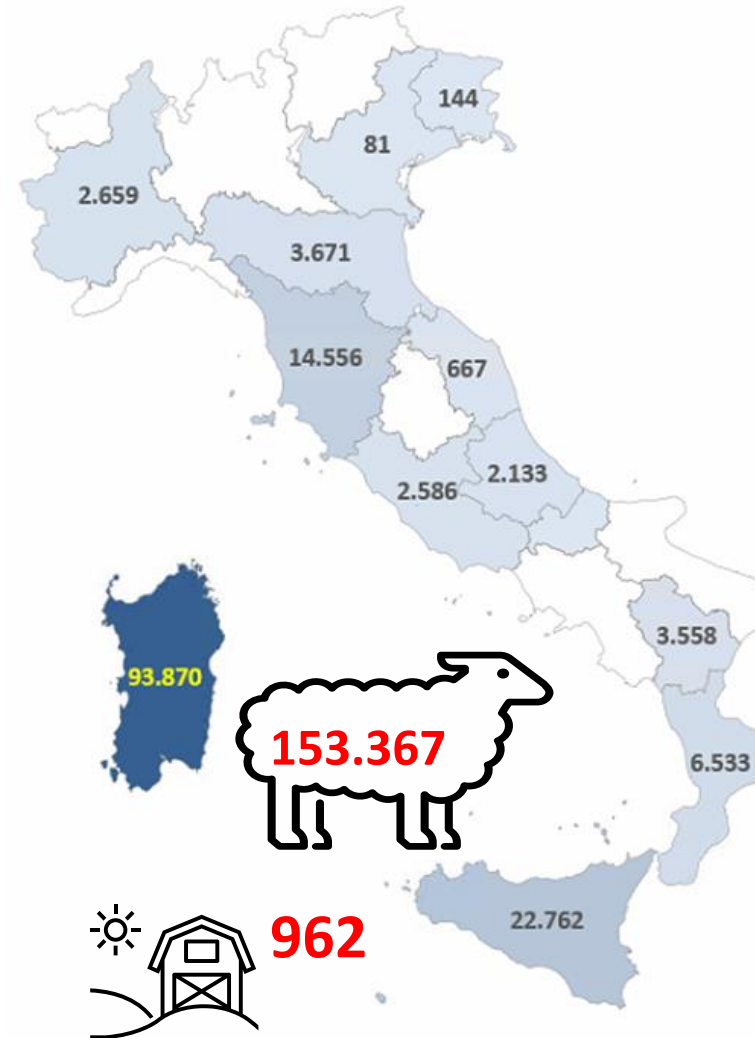
Goat heads (Dec. 31st, 2022) : **1.017.726**

Goat flocks in Italy (Dec. 31st, 2022): **51.056**

Goat breeds : **37 conservation, 3 selection**



Recorded heads, milk sheep, 2022



Recording protocols:
AT4, AC4

Sampling and fat/prot analysis:
only some breeds

Percentage of total heads by recording protocol:
AT4 5%, AC4 95%

Milk samples : **69.000**

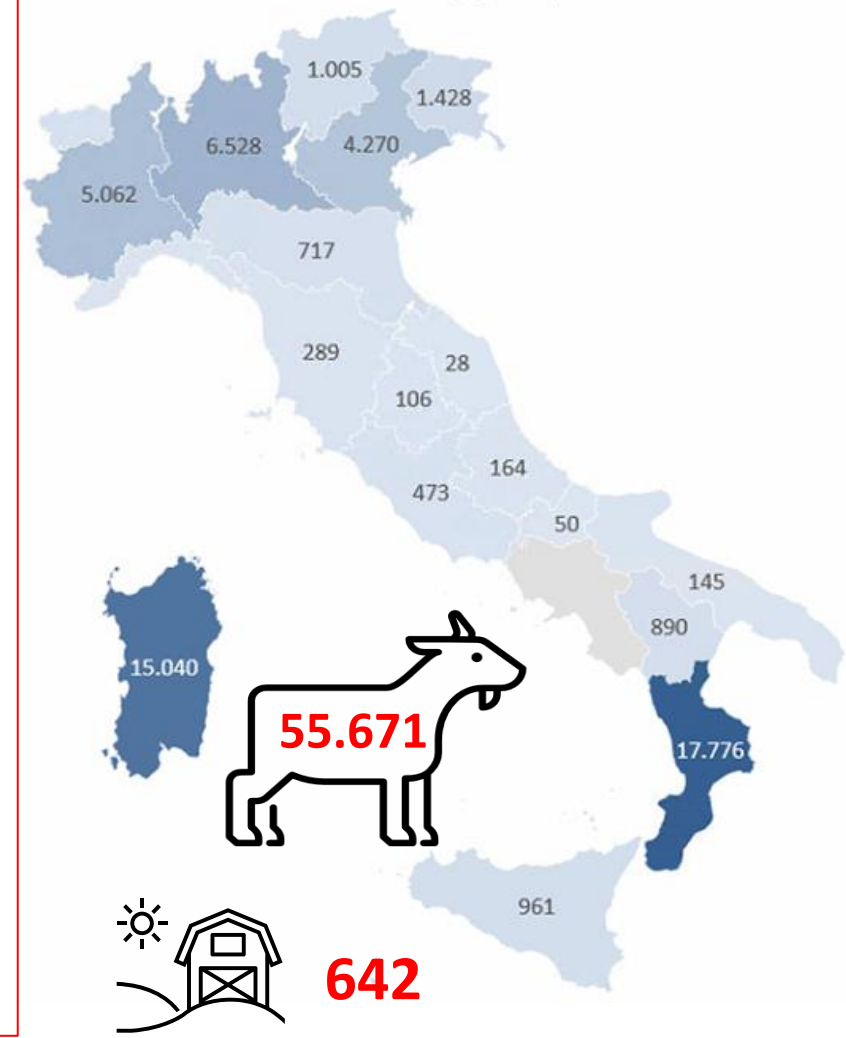
Recording protocols:
AT4

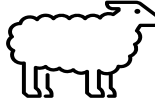
Sampling and fat/prot analysis: **All breeds**


Percentage of total heads by recording protocol:
AT4 100%

Milk samples : **189.000**

Recorded heads, goats, 2022



Breed		% on total
Sarda		72,0
Valle del Belice		7,8
Lacaune		5,0
Massese		4,5
Comisana		2,6
Delle Langhe		1,6
Assaf		0,9
Nera di Arbus		0,8
Carsolina		0,1
Barbaresca		0,1

Breed		% on total
Camosciata Delle Alpi		22,9
Sarda		22,5
Saanen		16,5
Aspromontana		14,4
Rustica di Calabria		8,4
Nicastrese		6,5
Murciana		2,0
Sarda Primitiva		0,9
Messinese		0,7
Maltese		0,5
Argentata Dell'etna		0,5
Roccoverano		0,4
Verzaschese		0,2



Performance recording 2022 – Yields, sheep



BREED	Primiparous			Secondiparous			Third parity and over			All ewes		
	Milk	Fat	Protein	Milk	Fat	Protein	Milk	Fat	Protein	Milk	Fat	Protein
	LT.	%	%	LT.	%	%	LT.	%	%	LT.	%	%
Lacaune	215			321			330			304		
Assaf	187			276			302			271		
Sarda	153	5,08	5,01	231			237			225		
Valle del Belice	152			234			227			225		
Massese	117			125			132			129		
Nera di Arbus	101			181			189			177		
Delle Langhe	87			138			154			142		
Comisana	76	6,51	5,06	173			151			156		
Pinzirità	75	6,07	5,31	120	5,86	4,80	129	5,96	4,78	117	5,93	4,85
Noticiana	53	6,47	5,28	105	5,70	5,23	101	5,93	5,10	97	5,82	5,20
Carsolina	23			119			106			114		



Performance recording 2022 – Yields, goats



Breed	Primiparous			Secondiparous			Third parity and over			All goats		
	Milk	Fat	Protein	Milk	Fat	Protein	Milk	Fat	Protein	Milk	Fat	Protein
	KG.	%	%	KG.	%	%	KG.	%	%	KG.	%	%
Saanen	420	3,52	3,30	621	3,55	3,34	639	3,40	3,30	584	3,48	3,32
Camosciata Delle Alpi	405	3,72	3,37	588	3,60	3,41	618	3,55	3,39	554	3,60	3,39
Bionda Adamello	386	3,45	3,02	402	3,11	2,96	550	2,83	2,83	479	2,98	2,89
Roccamerano	351	3,87	3,17	460	3,48	3,14	459	3,46	3,30	449	3,50	3,24
Murciana	237	4,75	3,53	430	4,60	3,53	327	4,36	3,40	368	4,52	3,48
Maltese	208	4,49	3,45	324	3,89	3,42	338	4,17	3,48	314	4,08	3,45
Verzaschese	196	3,83	3,23	345	3,87	3,39	345	3,51	3,19	303	3,75	3,30
Nicastrese	191	4,66	3,77	191	5,17	3,87	197	5,14	3,84	195	5,11	3,85
Jonica	157	4,46	3,82	263	5,25	3,87	292	5,08	3,73	283	5,10	3,76
Rossa Mediterranea (Derivata Di Siria)	146	4,67	3,48	189	4,40	3,80	182	4,02	3,50	169	4,37	3,59
Garganica	144	4,92	3,47	180	4,22	3,39	189	4,34	3,46	177	4,41	3,44
Aspromontana	128	4,33	3,15	173	4,45	3,71	185	4,54	3,71	180	4,51	3,71
Sarda	115	4,62	3,74	156	5,67	4,31	157	5,57	4,36	153	5,02	3,98
Rustica di Calabria	90	5,30	3,94	128	5,30	3,94	140	4,99	3,80	133	5,14	3,87
Sarda Primitiva	79	4,90	3,90	125			140			127	4,90	3,90

SCM is part of the institutional activities carried out by A.I.A

Checking the efficiency of milking machine and equipment

(Dry test)

ISO 6690, 5707, UNI 11008



Reliability of collected data and samples



Calibration and periodic checking of milk recording devices
ICAR recommendations



The many activities of the SCM contribute directly to ensuring animal welfare, milk quality and farm economic sustainability.

✓ Wet test

Relates *milking machine-animal-milker* for integrated evaluation of milking efficiency



✓ Milking routine assistance

Identifies critical points and proposes the ideal routine for farm

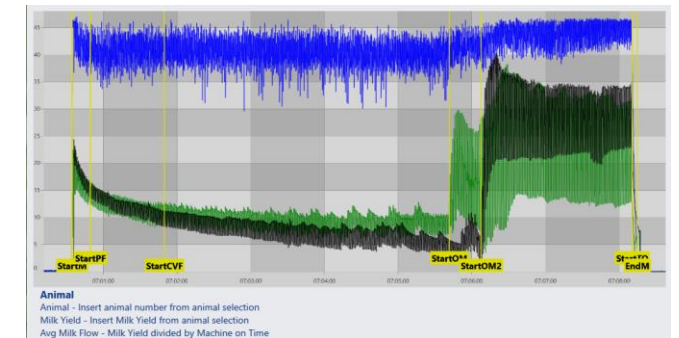
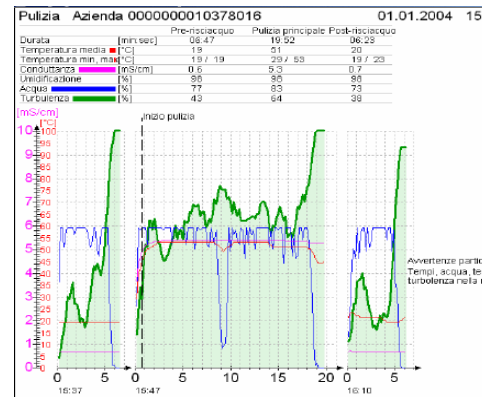
✓ Checking refrigeration (coolant) tanks

Checks tank functionality and provides indications as to the cooling efficiency of the milk



✓ Checking the efficiency of washing plants

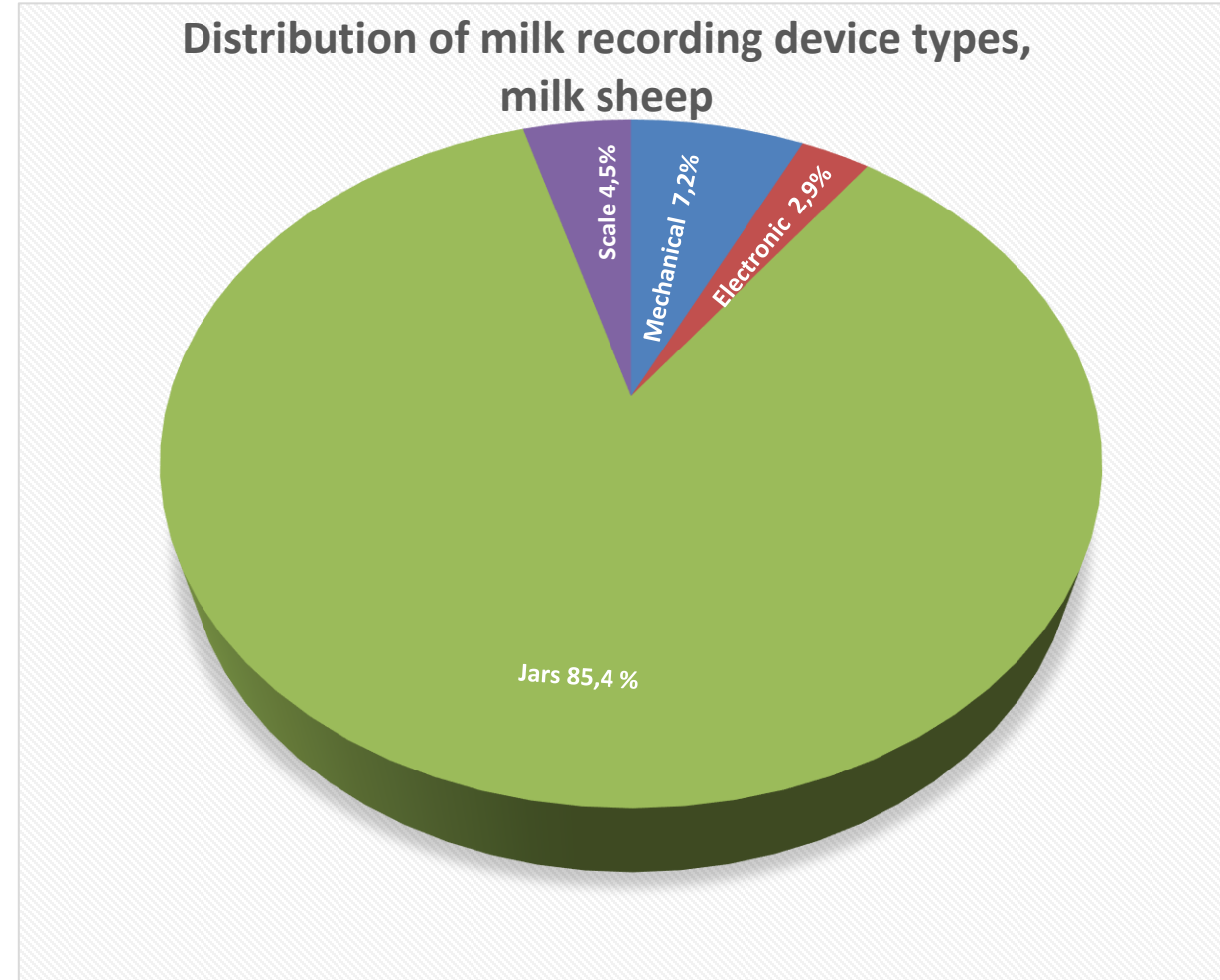
efficiency of the washing system in order to prevent microbiological proliferation



Milk sheep recording devices

Type of device	Brand / Model	Number instruments	Total	% on total
Mechanic Meter	Waikato MKV 4,5 l	415	415	7,2
Jars	MIBO	598	4935	85,4
	ROYAL	4337		
Electronic Meters	Lactocorder	39	166	2,9
	AFIKIM/TDM - Afifree	24		
	DE LAVAL - Free-Flow MM25	103		
Scale		262	262	4,5

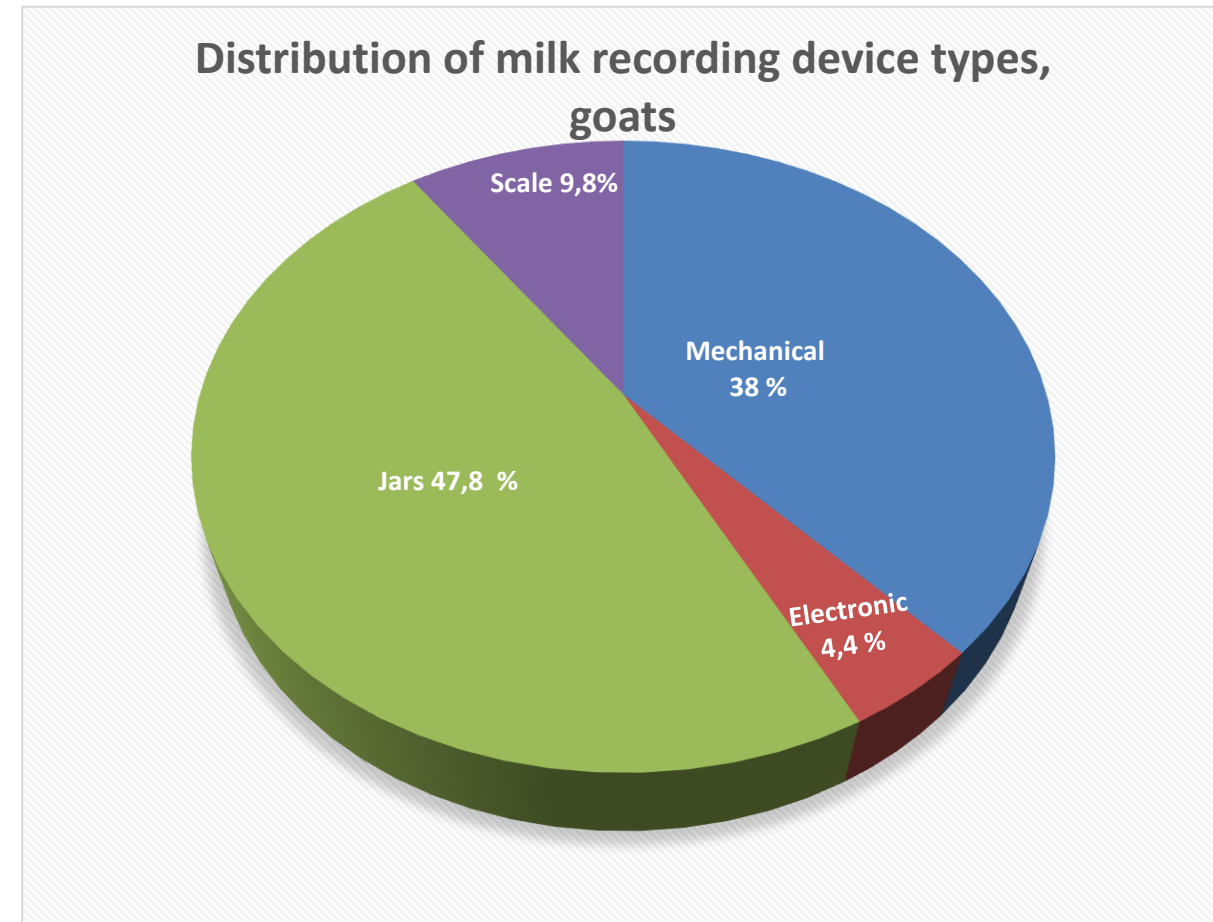
TOTAL 5778



Goats recording devices

Type of device	Brand / Model	Number instruments	Total	% on total
Mechanic Meter	Waikato MKV 4,5 l	883	1018	38,0
	TRUE-TEST Ltd - Tru test HI	135		
Jars	MIBO	191	1281	47,8
	MIELE	8		
	ITALIANA	84		
	ROYAL	998		
Electronic Meters	Lactocorder	39	118	4,4
	DE LAVAL - Free-Flow MM25	79		
Scale		263	263	9,8

TOTAL 2680



-Milk parlour line 12 + 12 , low milkline (Azienda Mesina, Pergine Valdarno, Arezzo (Tuscany)), Sarda ewes

-6 DeLaval MM25 randomly sampled and restored to factory default (Bias = 1000)



- Acid washing of plant

- 3 meters per line

- 10 animals milked per meter, total of 60 milkings

Milk parlour line 12 + 12

Meter # 1



Meter # 2



Meter # 3



Meter # 4



Meter # 5



Meter # 6

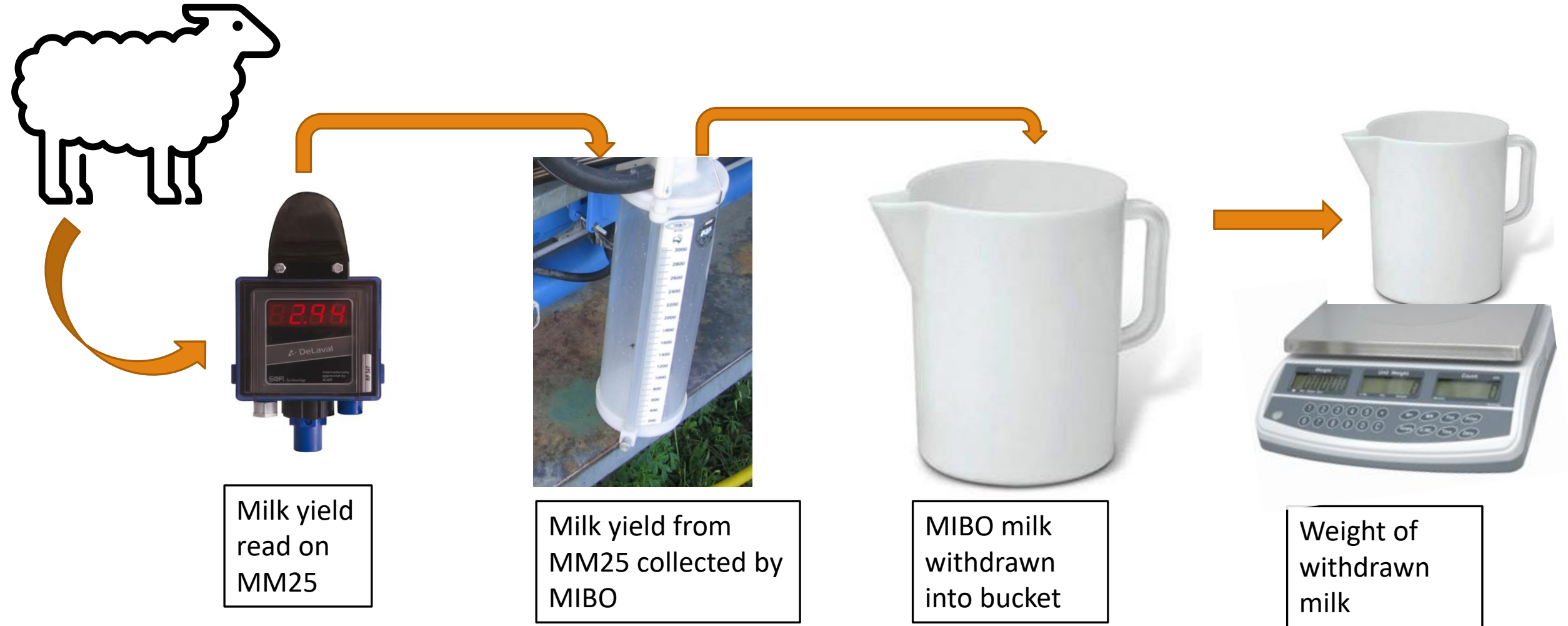


Pilot study : Sheep with DeLaval MM25

Materials and methods

- Particular attention to installation
- 6 portable MIBO jars connected with the outlet nipple of the MM25 to correctly collect the milk
- MIBO jars connected respecting the connecting pipe inclination as reported on manufacturer's instruction
- 6 buckets to collect milk from the jar
- a digital calibrated scale to weigh the milk in the bucket







Pilot study : Sheep with DeLaval MM25 Results



Meter #	Milked ewes	Recorded milk (g), average		Difference Scale - MM25, average	
		MM25	Scale (Reference)	g	% on Scale
1	10	582	543,1	-38,9	-7,61
2	10	567	548,1	-18,9	-9,39
3	10	551	530,5	-20,5	-13,12
4	10	564	564,1	0,1	-0,10
5	10	644	641,9	-2,1	-0,11
6	10	498	494,8	-3,2	-0,99



Pilot study : Sheep with DeLaval MM25 / Results

Effect of primiparous ewes on the bias

- Meters out of range: Meter # 1 All 10 recordings**

Animal #	MM25, g	Scale, g	Diff MM25 - Scale, g	Diff MM25 - Scale, % on Scale
1	700	668	-32	-4,79
2	620	614	-6	-0,98
3	230	236	6	2,54
4	690	674	-16	-2,37
5	700	685	-15	-2,19
6	580	575	-5	-0,87
7	530	446	-84	-18,83
8	660	593	-67	-11,30
9	520	420	-100	-23,81
10	590	520	-70	-13,46
Average	582	543,1	-38,9	-7,61

- Meters out of range: Meter # 1 Taking out primiparous**

Animal #	MM25, g	Scale, g	Diff MM25 - Scale, g	Diff MM25 - Scale, % on Scale
1	700	668	-32	-4,79
2	620	614	-6	-0,98
3	230	236	6	2,54
4	690	674	-16	-2,37
5	700	685	-15	-2,19
6	580	575	-5	-0,87
Average	586,7	575,3	-11,3	-1,44

If primiparous are included in the sample for calibration, risk to calibrate with a new bias not eliminating the error

Primiparous ewes
Kicks , less used to milking



Pilot study : Sheep with DeLaval MM25 / Results

Effect of low yield ewes on the bias



Meters out of range: Meter # 2 All 10 recordings

Meters out of range: Meter # 2 Taking out low producing ewes

Animal #	MM25, g	Scale, g	Diff MM25 - Scale, g	Diff MM25 - Scale, % on Scale
1	380	366	-14	-3,83
2	660	657	-3	-0,46
3	230	224	-6	-2,68
4	230	228	-2	-0,88
5	1050	1093	43	3,93
6	220	126	-94	-74,60
7	630	642	12	1,87
8	740	657	-83	-12,63
9	480	476	-4	-0,84
10	1050	1012	-38	-3,75
Average	567	548,1	-18,9	-9,39

Animal #	MM25, g	Scale, g	Diff MM25 - Scale, g	Diff MM25 - Scale, % on Scale
1	380	366	-14	-3,83
2	660	657	-3	-0,46
3	230	224	-6	-2,68
4	230	228	-2	-0,88
5	1050	1093	43	3,93
7	630	642	12	1,87
8	740	657	-83	-12,63
9	480	476	-4	-0,84
10	1050	1012	-38	-3,75
Average	605,6	595	-10,6	-2,14

Very low real yield can cause an overestimation in MM25

If low producing ewes are included in the sample for calibration, risk to calibrate with a new bias not eliminating the error



Pilot study : outcomes



- New devices, if correctly installed, are working ok
- Calibration is crucial because
 - ✓ *if in the set of milked animal used for calibration primiparous ewes are included, they can increase the error*
 - ✓ *Same if low yield ewes included*
 - ✓ *...last but not least, the device for calibration is not always immediately available for the on-farm activity since is managed by the dealer*



SCM : New instruments and services for milking parlours

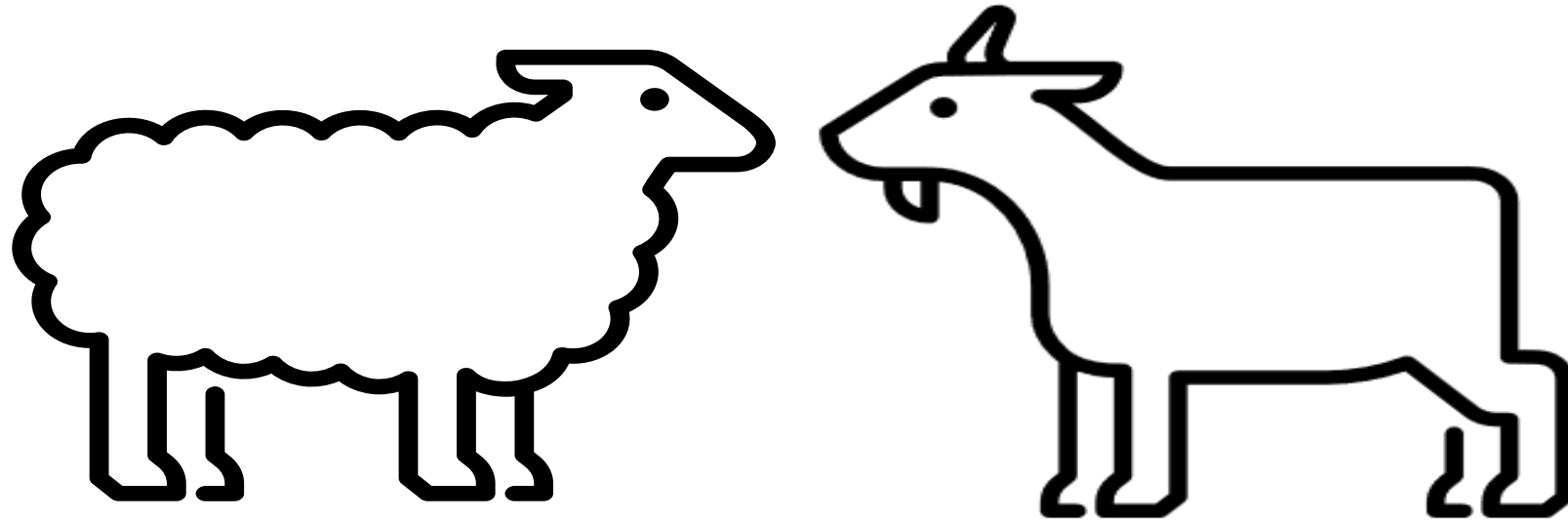


- It is important to check all technical parameters in milking machine parts for :
 - animal welfare (somatic cells), farm sustainability, correct use of the devices
 - We acquire innovative information and data with state-of-the-art instrumentation, providing the farmer with integrated, practical, broad-spectrum assistance
- With **LEO PROJECT** (EU – funded) :
 - **VaDIA** (Vacuum multisensor for evaluation of milking routine and machine efficiency)
 - **LACTOCORDER** (Analysis of flows, milking curves, animal milk ejection efficiency, routine info)

A.I.A. –SCM is setting up a national database of check recordings from all recorded farms (dairy cattle, milk sheep, goats, buffaloes) that is imported in LEO Opendata database



THANK YOU !



***Special thanks to
Azienda Mesina – Pergine Valdarno (AR) for the collaboration in the pilot study***