



THE GLOBAL STANDARD
FOR LIVESTOCK DATA

Survey on wool - analysis -

Sheep, Goats and Camelids Working Group

Main parts of Survey

- Country-Organisation
- Size of sheep population
- Information about the population (1st to 5th sheep breed)
- Analysed phenotypes

First part

- Country-Organisation
- Size of sheep population
 - Total size of population
 - Population in performance recording on wool
 - Number of farms with performance recording on wool
- Information about the population (1st to 5th sheep breed)
 - Name of the breed
 - Size of population
 - Population in performance recording on wool
 - Number of farms with performance recording on wool

Number of Survey by Country (and Organisation)

N	Country	Organisation
1	Australia	Meat and Livestock Australia
2	Austria	Österreichischer Bundesverband für Schafe und Ziegen
3	Bulgaria	Iasrj
4	Croatia	Croatian Agency for Agriculture and Food
5	Czech Republic	Czech Moravian Breeders Corporation, Inc.
6	Finland	ProAgria Keskusten Liitto
7	Iceland	The Icelandic Agricultural Advisory Centre
8	Latvia	Agricultural Data Centre
9	New Zealand	Beef and Lamb Genetics
10	New Zealand	Lic
11	Portugal	Iniav
12	Portugal	ANCORME - Associação Nacional Criadores de Ovinos da Raça Merina
13	Slovenia	University of Ljubljana, Biotechnical Faculty
14	South Africa	SA Stud Book and Animal Improvement Association
15	South Africa	Agricultural Research Concil
16	Sweden	Skanesemin ek for
17	Uruguay	Inia

Status of Survey

Status	N	%
Completed FULL Survey	10	58.82
Completed PARTIAL Survey	4	23.53
Partial & Opted Out	3	17.65

Status of Survey by Country (and Organisation)

Country	Status		
	Completed FULL Survey	Completed PARTIAL Survey	Partial & Opted Out
Australia		1	
Austria		1	
Bulgaria			1
Croatia		1	
Czech Republic	1		
Finland	1		
Iceland	1		
Latvia	1		
New Zealand	1	1	
Portugal	1		1
Slovenia	1		
South Africa	2		
Sweden			1
Uruguay	1		
All	10	4	3

Basic information about the total size of the wool sheep population

Country	Total size of population	Population in wool performance recording	% of total population	N of farms with wool performance recording
Australia	70,000,000	2,900,000	4	222
Bulgaria	10	2	20	1
Croatia	42,000	200	0.47	1
Finland	14,170	1,000	7	10
Iceland	432,023			
Latvia	28,224	5,448	19	49
New Zealand	27,390,000			252
New Zealand	27,600,000	20,000	0.7	35
Portugal	26,232	26,232	100	90
Slovenia	110,000	5,452	5	2
South Africa	24,000,000	626,000	3	589
South Africa	15,000,000	13,550	0.09	65
Uruguay	6,723,548	25,500	0.4	81

Breeds by Country

N	Country	Organisation	Breed				
			First	Second	Third	Fourth	Fifth
1	Australia	Meat and Livestock Australia	Merino				
2	Bulgaria	Iasrj	Merino				
3	Finland	ProAgria Keskusten Liitto	Finnsheep	Kainuun Grey			
4	Iceland	The Icelandic Agricultural Advisory Centre	The Icelandic sheep				
5	Latvia	Agricultural Data Centre	Latvian Darkheaded				
6	New Zealand	Beef and Lamb Genetics	Romney	Perendale	Corriedale	Composite	Merino
7	Portugal	ANCORME - Associação Nacional Criadores de Ovinos da Raça Merina	Black Merino	White Merino			
8	Slovenia	University of Ljubljana, Biotechnical Faculty	Jezersko-solčava sheep				
9	South Africa	Agricultural Research Concil	Merino	Dohne Merino			
10	South Africa	SA Stud Book and Animal Improvement Association	Merino	Dohne Merino	SA Mutton Merino	Merino Landsheep	
11	Uruguay	Inia	Corriedale	Australian Merino	Ideal Polwarth	Merilin	Romney Marsh

Common breeds

First breed	N
Merino	4
Black Merino	1
Corriedale	1
Finnsheep	1
Jezersko-solčava sheep	1
Latvian Darkheaded	1
Romney	1
The Icelandic sheep	1

Second breed	N
Dohne Merino	2
Australian Merino	1
Kainuun Grey	1
Perendale	1
White Merino	1

Basic information – 1st breed

Country - Breed		Total size of population	Population in wool performance recording	% of total population	N of farms with wool performance recording
Australia	Merino	70,000,000	135,000	0.2	222
Bulgaria	Merino	5	2	40	1
Finland	Finnsheep	11,523	1,000	9	10
Iceland	The Icelandic sheep	432,023			
Latvia	Latvian Darkheaded	26,126	891	3	36
New Zealand	Romney	13,000,000	136,285	1	150
Slovenia	Jezersko-solčava sheep	5,452	368	7	2
South Africa	Merino		213,000		98
South Africa	Merino	13,000,000	7,626	0.05	40
Uruguay	Corriedale	2,544,127	15,000	0.6	40

Basic information – 2nd breed

Country - Breed		Total size of population	Population in wool performance recording	% of total population	N of farms with wool performance recording
Finland	Kainuun Grey	2,655	500	19	10
New Zealand	Perendale	2,500,000	31,074	1	58
Portugal	White Merino	11,026	11,026	100	32
South Africa	Dohne Merino		283,000		90
South Africa	Dohne Merino	2,000,000	3,933	0.2	25
Uruguay	Australian Merino	1,497,944	6,000	0.4	19

Basic information – 3rd breed

Country - Breed		Total size of population	Population in wool performance recording	% of total population	N of farms with wool performance recording
New Zealand	Corriedale	98,000	5,743	6	20
South Africa	SA Mutton Merino		140,000		157
Uruguay	Ideal Polwarth	499,315	1,000	0.2	3

Basic information – 4th breed

Country - Breed		Total size of population	Population in wool performance recording	% of total population	N of farms with wool performance recording
New Zealand	Composite	383,000	42,740	11	90
South Africa	Merino Landsheep		2,500		21
Uruguay	Merilin	225,880	1,500	0.7	8

Basic information – 5th breed

Country - Breed		Total size of population	Population in wool performance recording	% of total population	N of farms with wool performance recording
New Zealand	Merino	140,000			
Uruguay	Romney Marsh	178,327	1,000	0.6	5

Analysed phenotypes

- Fleece weight
- Clean fleece weight or yield
- Fiber diameter
- Fiber diameter variation
- Staple length
- Staple strength
- Homogeneity of fleece
- Fibre density
- Fibre curvature
- Color
- Visual appreciation
- Kind and definition of visual appreciation
- Additional traits
- Traits requiring a sample of wool

Traits by country

Country	Organisation	Fleece weight	Clean fleece weight	Fiber diameter	Fiber diameter variation	Color	Staple length	Staple strength	Homogeneity	Fibre density	Fibre curvature	Visual appreciation
Australia	Meat and Livestock Australia	Yes	Yes	Yes	Yes	Yes	No	No	No	No	No	No
Finland	ProAgria Keskusten Liitto	No	No	Yes	No	Yes	Yes	No	Yes	Yes	Yes	No
Latvia	Agricultural Data Centre	No	No	Yes	Yes	No	Yes	No		No	No	Yes
New Zealand	Beef and Lamb Genetics	Yes	Y for some breeds/flocks	Yes for some flocks/breeds	Sometimes	Sometimes, not often	Rarely	Rarely	No	No	Rarely	Rarely
Portugal	ANCORME - Associação Nacional Criadores de Ovinos da Raça Merina	Yes (in some situations)	No	Yes	No	Yes	Yes	Yes	Yes	Yes	No	Yes
Slovenia	University of Ljubljana, Biotechnical Faculty	Yes	No	Yes	Yes	Yes	Yes	No	No	No	Yes	No
South Africa	Agricultural Research Concil	Yes	Yes	Yes	Yes	No	Yes	Yes	No	No	No	Yes
South Africa	SA Stud Book and Animal Improvement Association	Yes	Yes	Yes	No	No	Yes	No	No	No	No	Yes (Merino and SA Mutton Merino)
Uruguay	Inia	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	Yes	Yes

Common traits

Trait	N
Fiber diameter	9
Staple length	8
Fleece weight	7
Fiber diameter variation	6
Visual appreciation	6
Color	6
Clean fleece weight	5
Fibre curvature	4
Staple strength	3
Fibre density	2
Homogeneity	2

Kind of visual appreciation and the definition

Country	Organisation	Kind and definition of visual appreciation
Finland	ProAgria Keskusten Liitto	Finnsheep wool should be one coloured (all coloured white, brown, black, gray), staple good, tight, keeps dust and dirt away. Not so tight good 3 (1-5) crimp/ 3cm 6-8 , staple should be narrowed from top, very good luster, no kempy fibres (thigh specially) . Staple length good, not too short.
Latvia	Agricultural Data Centre	Black hair and white spots aren't allowed on different parts of the body. Linear exterior are estimated after shearing. System includes 18 traits and are distributed in 3 trait groups (for body - 7 traits, for musculatura -6 traits and for legs - traits)
New Zealand	Beef and Lamb Genetics	staple structure, weak or open back, colour, medulation
Portugal	ANCORME - Associação Nacional Criadores de Ovinos da Raça Merina	wool colour, staple structure, crimp, dust penetration
South Africa	SA Stud Book and Animal Improvement Association	Conformation Score (1-Poor 9-Excellent), Fleece Score (1-Poor 9-Excellent)
Uruguay	Inia	fleece rot, wool colour, character/style, crimp, weathering and dust penetration, presence of medullated or kempy fibres in the fleece, pigmentation, wool in face

Fleece weight (1)

Country	Organisation	Recording	Shearing animals	Who collect	Method	Device	Units	Recording age	Growth period
Australia	Meat and Livestock Australia	Yes	Professional Shearer	Farmer	weight scales		kg	12 months, 18 months, 28 months	6 months / 12 months
Finland	ProAgria Keskusten Liitto	No	Farmer and Professional Shearer	Farmer			kg	over 1 year	
Iceland	The Icelandic Agricultural Advisory Centre	No	Farmer and Professional Shearer						
New Zealand	Beef and Lamb Genetics	Yes	Professional Shearer	Farmer	Tag or EID recorded, fleeces weighed	Scales (electronic weight scales)	kg	8 months to 1 year	3 months to 1 year
Portugal	ANCORME - Associação Nacional Criadores de Ovinos da Raça Merina	Yes (in some situations)	Professional Shearer	Technician	weight	KERN HCB 99kg, 50g	kg	> 18 months (after the first shearing)	10 months
Slovenia	University of Ljubljana, Biotechnical Faculty	Yes	Professional Shearer	Technician	Bowen	electric scissors/equipment	kg	270 days in average	birth to 270 days of age
South Africa	Agricultural Research Concil	Yes	Professional Shearer	Farmer	Manual	Scale	kg and grams	+/- 12 months	180 days
South Africa	SA Stud Book and Animal Improvement Association	Yes	Professional shearer	Farmer	Scale, electronic and written down	Scale	Kg	Year old	8 to 12 months
Uruguay	Inia	Yes	Professional Shearer	Farmer	weight	weight scale. Data put into software developed by SUL	kg	one year old	300 days

Fleece weight (2)

Country	Organisation	Technique of shearing	Assessment	BV	BV_ec_index	Computation method
Australia	Meat and Livestock Australia	bowen		Yes	No	GBLUP
Finland	ProAgria Keskusten Liitto					
Iceland	The Icelandic Agricultural Advisory Centre					
New Zealand	Beef and Lamb Genetics	Electronic weigh scales (large suspended tray)	Weight	Yes	Yes	corrections for birth year, age of dam, age, sex, mob, birth and rearing rank
Portugal	ANCORME - Associação Nacional Criadores de Ovinos da Raça Merina	electrical equipment	measured assessment	Yes	Yes	BLUP animal model
Slovenia	University of Ljubljana, Biotechnical Faculty	Bowen	measured assessment	No	No	
South Africa	Agricultural Research Concl	Electrical equipment and manual scissors	measured assessment	Yes	Yes	
South Africa	SA Stud Book and Animal Improvement Association	Both		No	Yes	Recording within contemporary groups, models fitted in BLUP evaluation include sex, age, days wool growth, HYS, age of dam in a multiple trait BLUP Animal Model
Uruguay	Inia	Tally-Hi	measured assessment	Yes	Yes	EPD BLUP

Clean fleece weight or yield (1)

Country	Organisation	Recording	Who collect	Method	Device	Units	Recording age	Growth period
Australia	Meat and Livestock Australia	Yes	lab	washing		kg/%	12,18,28 months	6/12 months
New Zealand	Beef and Lamb Genetics	Y for some breeds/flocks	Sample taken by farmer sent to laboratory	Weighed, washed, weighed		%	6 months to 1 year	3 months to 1 year
South Africa	Agricultural Research Concil	Yes	Farmer	manual	scale	kg and grams	+/-12 months	180 days
South Africa	SA Stud Book and Animal Improvement Association	Yes	Farmer, lab	Sample send to lab to determine clean fleece yield	Scale, electronic and written down	kg	Year old	8-12 months
Uruguay	Inia	Yes	technician of Uruguayan Wool Secretariat (SUL)	yield IWTO	SUL laboratory	% yield and kg for CFW	one year old	300 days

Clean fleece weight or yield (2)

Country	Organisation	Assessment	BV	BV_ec_index	Computation method
Australia	Meat and Livestock Australia		Yes	Yes	GBLUP
New Zealand	Beef and Lamb Genetics	Measured	Yes	uses clean fleece weight if available or defaults to greasy	birth year, birth flock, gender, age of dam, birth rank rearing rank, age, mob
South Africa	Agricultural Research Council	Measured	Yes	Yes	
South Africa	SA Stud Book and Animal Improvement Association	Measured	Yes	Yes (Merino and Dohne Merino)	Editing of data with regards to age and weight specifications, BLUP Animal Model with sex, hys, age at shearing, age of dam effects
Uruguay	Inia	Measured	Yes	Yes	EPD. BLUP

Fiber diameter (1)

Country	Organisation	Recording	Who collect	Method	Device	Units	Recording age	Growth period
Australia	Meat and Livestock Australia	Yes	Lab		laserscan	micro meters	12/18/25+ months	6/12 months
Finland	ProAgria Keskusten Liitto	Yes	Farmer or technician	Bradford counts for lambs age 90-150 days, counting crimp, some GIFT testing, utilises OFDA2000	Finnish material used	Micron	depends, lambs or rams over 1 year	6 months
Latvia	Agricultural Data Centre	Yes	Supervisor	Bradford classification	fineness of wool class: 58; 56; 50; 48; 46	digits	9-18 month	9-18 month
New Zealand	Beef and Lamb Genetics	Yes for some flocks/breeds	Farmer or wool classer	OFDA, laserscan and airflow	OFDA, laserscan and airflow	Micron	8 months to 1 year	3 months to 1 year
Portugal	ANCORME - Associação Nacional Criadores de Ovinos da Raça Merina	Yes	Technician	visual appreciation and Fiberlux	Fiberlux	Micron	>18 months (after first shearing)	10 to 12 months
Slovenia	University of Ljubljana, Biotechnical Faculty	Yes	Technician	Bowen	electric equipment	Micron	270 days of age	birth to 270 days of age
South Africa	Agricultural Research Concil	Yes	Farmer	OFDA 2000	OFDA 2000	Micron	+/- 12 months	Minimal
South Africa	SA Stud Book and Animal Improvement Association	Yes	Farmer, Lab	30g mid-rib sample send to lab. Cross section of individual fibers determined in microns using	Optical Fibre Diameter Analyser	Micron	Year old	8-12 months
Uruguay	Inia	Yes	Technician of Uruguayan Wool Secretariat (SUL)	IWTO	lasescan	Micron	one year old	300

Fiber diameter (2)

Country	Organisation	Assessment	BV	BV_ec_index	Computation method
Australia	Meat and Livestock Australia	sometimes using visual or feel but not included in evaluation	Yes	Yes	GBLUP
Finland	ProAgria Keskusten Liitto	lambs age 90-150 wool assessment, different traits	No	No	No
Latvia	Agricultural Data Centre	visual assessment	Yes	No	
New Zealand	Beef and Lamb Genetics	Measured can record a subjective fibre diameter by wool classer	Yes	For finer wool breeds	birth year, birth flock, age of dam, sex, age, birth and rearing rank, mob
Portugal	ANCORME - Associação Nacional Criadores de Ovinos da Raça Merina	subjective measured	Yes	Yes	BLUP
Slovenia	University of Ljubljana, Biotechnical Faculty	measured assessment	No	No	No
South Africa	Agricultural Research Council	Measured	Yes	Yes	
South Africa	SA Stud Book and Animal Improvement Association	Measured	Yes	Yes (Merino and Dohne Merino)	Editing with regards to age and measurement specifications, BLUP Animal Model with hys, age at shearing, sex, age of dam effects
Uruguay	Inia	Measured	Yes	Yes	EPD. BLUP

Fiber diameter variation (1)

Country	Organisation	Recording	Who collect	Method	Device	Units	Recording age	Growth period
Australia	Meat and Livestock Australia	Yes	Lab	laserscan		micro metre	12/18/24+ months	6/12 months
Latvia	Agricultural Data Centre	Yes	Supervisor	Bradford classification system			9-18 month	9-18 month
New Zealand	Beef and Lamb Genetics	Sometimes	mid side sample by farmer - measured by lab	OFDA or LAaserscan	OFDa, laserscan and airflow	either standard deviation or coefficient of variation of FDiameter	6 month to 1 year	6 month to 1 year
Slovenia	University of Ljubljana, Biotechnical Faculty	Yes	Technician	Bowen	electric equipment	micron	270 days	birth to 270 days
South Africa	Agricultural Research Concil	Yes	Farmer	OFDA 2000	OFDA 2000	%	+/- 12 months	minimal
Uruguay	Inia	Yes	technician of Uruguayan Wool Secretariat (SUL)	IWTO-12	Sirolan Laserscan	%	one year old	300

Fiber diameter variation (2)

Country	Organisation	Assessment	BV	BV_ec_index	Computation method
Australia	Meat and Livestock Australia		Yes	No	GBLUP
Latvia	Agricultural Data Centre	Subjective	Yes	No	
New Zealand	Beef and Lamb Genetics	Precise	Yes	Yes currently not after 2020	birth year, birth flock, age of dam, age, sex, birth and rearing rank, mob
Slovenia	University of Ljubljana, Biotechnical Faculty	Measured	No	No	
South Africa	Agricultural Research Council	Measured	No	No	
Uruguay	Inia	Measured	Yes	No	EPD. BLUP

Staple length (1)

Country	Organisation	Recording	Who collect	Method	Device	Units	Recording age	Growth period
Finland	ProAgria Keskusten Liitto	Yes	Technician	measured from side		cm	age 90-150 days, lambs	6 months
Latvia	Agricultural Data Centre	Yes	Supervisor	visually		class from 1-4	9-18 month	9-18 month
New Zealand	Beef and Lamb Genetics	Rarely	mid side sample by farmer, tested by laboratory	pull test, average of 55 staples	Atlas - automatic tester length and strength	mm	8 month to 1 year	6 month to 1 year
Portugal	ANCORME - Associação Nacional Criadores de Ovinos da Raça Merina	Yes	Technician	wool grading scale	wool grading scale	cm	> 18 months (after the first shearing)	10 to 12 months
Slovenia	University of Ljubljana, Biotechnical Faculty	Yes	Technician	Bowen	electric equipment	mm	270 days	birth to 270 days
South Africa	Agricultural Research Council	Yes	Farmer, Technician	Wool ruler	Wool ruler	mm	+/- 12 months	minimal
South Africa	SA Stud Book and Animal Improvement Association	Yes	Farmer, lab	30g mid-rib sample : Measurement of length of staple	Staple Length Detector	mm	Year old	8-12 months
Uruguay	Inia	Yes	Technician of Uruguayan Wool Secretariat (SUL)	IWTO-17	Almeter	cm	one year old	300 days

Staple length (2)

Country	Organisation	Assessment	BV	BV_ec_index	Computation method
Finland	ProAgria Keskusten Liitto	measured from side			
Latvia	Agricultural Data Centre	Subjective	Yes	No	
New Zealand	Beef and Lamb Genetics	precise	Yes	Yes currently not after June 2020	birth year, birth flock, age of dam, age, sex, birth & rearing rank mob
Portugal	ANCORME - Associação Nacional Criadores de Ovinos da Raça Merina	Measured	Yes	No	Blup
Slovenia	University of Ljubljana, Biotechnical Faculty	Measured	No	No	No
South Africa	Agricultural Research Concil	Measured	Yes	Yes	
South Africa	SA Stud Book and Animal Improvement Association	Measured	Yes	Yes (Merino)	Editing with regards to age and measurement specifications. BLUP Animal Model with hys, sex, age at measurement and age of dam effects.
Uruguay	Inia	Measured	Yes	No	EPD. BLUP

Staple strength (1)

Country	Organisation	Recording	Who collect	Method	Device	Units	Recording age	Growth period
New Zealand	Beef and Lamb Genetics	Rarely	midside sample by farmer or classer laboratory tested	pull test	Atlas - automatic tester length and strength	N/ktex	8 month to 1 year	6 month top 1 year
Portugal	ANCORME - Associação Nacional Criadores de Ovinos da Raça Merina	Yes	Technician	strength with your hands	hands		> 18 months (after the first shearing)	10 to 12 months
South Africa	Agricultural Research Concil	Yes	Technician	ATLAS Test		Newtons / Ktex	+/- 12 months	Minimal

Staple strength (2)

Country	Organisation	Assessment	BV	BV_ec_index	Computation method
New Zealand	Beef and Lamb Genetics	precise	Yes	No	birth year, birth flock, age of dam, age, birth and rearing rank, sex, mob
Portugal	ANCORME - Associação Nacional Criadores de Ovinos da Raça Merina	Subjective	No	No	
South Africa	Agricultural Research Concil	Measured	No	No	

Homogeneity of fleece (1)

Country	Organisation	Recording	Who collect	Method	Device	Units	Recording age	Growth period
Finland	ProAgria Keskusten Liitto	Yes	Technician	visual		1-5	90-150 days lambs	90-150 days lambs
Portugal	ANCORME - Associação Nacional Criadores de Ovinos da Raça Merina	Yes	Technician	visual		Homogeneous or heterogeneous	> 18 months (after the first shearing)	10 to 12 months

Homogeneity of fleece (2)

Country	Organisation	Assessment	BV	BV_ec_index	Computation method
Finland	ProAgria Keskusten Liitto		No	No	No
Portugal	ANCORME - Associação Nacional Criadores de Ovinos da Raça Merina	Subjective	No	No	No

Fibre density (1)

Country	Organisation	Recording	Who collect	Method	Device	Units	Recording age	Growth period
Finland	ProAgria Keskusten Liitto	Yes	Technician	Visual		1-5	90-150 days lambs	
Portugal	ANCORME - Associação Nacional Criadores de Ovinos da Raça Merina	Yes	Technician		hands	Yes or No	> 18 months (after the first shearing)	10 to 12 months

Fibre density (2)

Country	Organisation	Assessment	BV	BV_ec_index	Computation method
Finland	ProAgria Keskusten Liitto	Subjective , 1-5	No	No	No
Portugal	ANCORME - Associação Nacional Criadores de Ovinos da Raça Merina	Subjective	No	No	No

Fibre curvature (1)

Country	Organisation	Recording	Who collect	Method	Device	Units	Recording age	Growth period
Finland	ProAgria Keskusten Liitto	Yes	Technician	counting per 3 cm one side		amount how many/per 3 cm staple, one a side, tree places	90-150 days	90-150 days
New Zealand	Beef and Lamb Genetics	Rarely	midside sample by farmer or wool classer, Tested bu Laboratory			Fibre curvature or std deviation of curvature	8 month to 1 year	6 month to 1 year
Slovenia	University of Ljubljana, Biotechnical Faculty	Yes	Technician	Bowen	electric equipment	degrees/millimetre	270 days	birth to 270 days
Uruguay	Inia	Yes	Technician of Uruguayan Wool Secretariat (SUL)	IWTO	Sirolan Lasercan		one year old	300 days

Fibre curvature (2)

Country	Organisation	Assessment	BV	BV_ec_index	Computation method
Finland	ProAgria Keskusten Liitto	using luler	No	No	No
New Zealand	Beef and Lamb Genetics	Measured	Yes	Yes in finer wool breeds- not after June 2020	Birth year, birth flock age of dam, sex, age, birth and rearing rank, mob
Slovenia	University of Ljubljana, Biotechnical Faculty	Measured	No	No	No
Uruguay	Inia	Measured	Yes	No	EPD. BLUP

Color recording (1)

Country	Organisation	Recording	Who collect	Method	Device	Units	Recording age	Growth period
Australia	Meat and Livestock Australia	Yes	Farmer	Visual	visual score guide	1-5 scale	12 months	6/12 months
Finland	ProAgria Keskusten Liitto	Yes	Farmer			different colours	lambs	6 months
New Zealand	Beef and Lamb Genetics	sometimes - not often	Farmer	Mostly a colour score using a standard chart - sometimes measured	Standard colour chart, spectrometer	Y-Z tristimulis values	8 month to 1 year	6 month to 1 year
Portugal	ANCORME - Associação Nacional Criadores de Ovinos da Raça Merina	Yes	Technician	Wool Grading scale	Wool Grading Scale	numeric	>18 months (after the first shearing)	10 to 12 months
Slovenia	University of Ljubljana, Biotechnical Faculty	Yes	Technician	Visual	eyes		270 days	birth to 270 days
Uruguay	Inia	Yes	technician of Uruguayan Wool Secretariat (SUL)	IWTO	colorimetr	Y-Z and Y	one year old	300 days

Color recording (2)

Country	Organisation	Assessment	BV	BV_ec_index	Computation method
Australia	Meat and Livestock Australia	subjective	No	No	
Finland	ProAgria Keskusten Liitto		No	No	No
New Zealand	Beef and Lamb Genetics	both visual assessment or precise	Yes	Yes	birth year, birth flock, age of dam, sex, birth rank and rearing rank, age, mob
Portugal	ANCORME - Associação Nacional Criadores de Ovinos da Raça Merina	subjective	No	No	No
Slovenia	University of Ljubljana, Biotechnical Faculty	subjective	No	No	No
Uruguay	Inia	measured assessment	Yes	Yes	EPD. BLUP

Visual appreciation (1)

Country	Organisation	Recording	Who collect	Method	Device	Units	Recording age	Growth period
Latvia	Agricultural Data Centre	Yes	two experts	linear assessment		points from 1-9	9-18 month	9-18 month
New Zealand	Beef and Lamb Genetics	Rarely	Farmer or wool classer	Visual		usually a score	8 month to 1 year	
Portugal	ANCORME - Associação Nacional Criadores de Ovinos da Raça Merina	Yes	Technician				> 18 months (after the first shearing)	10 to 12 months
South Africa	Agricultural Research Concil	Yes	Both	Scorning scale		0 - 9	+/- 12 months	
South Africa	SA Stud Book and Animal Improvement Association	Yes (Merino and SA Mutton Merino)	Inspector of Breeders' Society	Linear Score or Overall Impression	Visual assessment/score	Score 1 - 9	Year old	minimal
Uruguay	Inia	Yes	both: farmer and SUL technician	Visual	data put into SUL software	3 classes	250 days	8 - 12 months wool growth

Visual appreciation (2)

Country	Organisation	Assessment	BV	BV_ec_index	Computation method
Latvia	Agricultural Data Centre	body- subjective assessment and measured	Yes		
New Zealand	Beef and Lamb Genetics	Subjective	No	No	No
Portugal	ANCORME - Associação Nacional Criadores de Ovinos da Raça Merina	Subjective	Yes	Yes	BLUP
South Africa	Agricultural Research Concil	Subjective	Yes	No	
South Africa	SA Stud Book and Animal Improvement Association	Subjective	Yes (Merino and SA Mutton Merino)	No	Editing with regards to age specifications. BLUP Animal Model with cf, age, sex, age of dam, birth and rearing status
Uruguay	Inia	Subjective	No	No	

Kind of visual appreciation and the definitions

Country	Organisation	Kind visual appreciation and definitions
Portugal	ANCORME - Associação Nacional Criadores de Ovinos da Raça Merina	wool colour, staple structure, crimp, dust penetration
New Zealand	Beef and Lamb Genetics	staple structure, weak or open back, colour, medulation
Uruguay	Inia	fleece rot, wool colour, character/style, crimp, weathering and dust penetration, presence of medullated or kempy fibres in the fleece, pigmentation, wool in face
Finland	ProAgria Keskusten Liitto	Finnsheep wool should be one coloured (all coloured white, brown, black, gray), staple good, tight, keeps dust and dirt away. Not so tight good 3 (1-5) crimp/ 3cm 6-8 , staple should be narrowed from top, very good luster, no kempy fibres (thigh specially) . Staple length good, not too short.
South Africa	SA Stud Book and Animal Improvement Association	Conformation Score (1-Poor 9-Excellent), Fleece Score (1-Poor 9-Excellent)
Latvia	Agricultural Data Centre	Black hair and white spots aren't allowed on different parts of the body. Linear exterior are estimated after shearing. System includes 18 traits and are distributed in 3 trait groups (for body - 7 traits, for musculatura -6 traits and for legs - traits)

Additional traits and methods

Country	Organisation	Trait
Finland	ProAgria Keskusten Liitto	luster, 1-5, 1 very dull, 5 very shiny, silky feeling
Latvia	Agricultural Data Centre	Fatsweaters - amount and quality, deviation of this trait is yellow colour.
Slovenia	University of Ljubljana, Biotechnical Faculty	Comfort Factor, Spin Fineness
South Africa	SA Stud Book and Animal Improvement Association	Comfort Factor - percentage fibres in sample below 30um
Uruguay	Inia	Body weight at birth, weaning, postweaning, shering, Faecal Egg Count (optional) 1 or 2 mesures, Body Condition Score, FAMACHA and body weight at FEC (optional)

Traits requiring a sample of wool

Country	Organisation	How many sample	Part of body	Who collects	Who sends	Laboratory
Finland	ProAgria Keskusten Liitto	500	side	Farmer or Technician	Farmer or technician	Art Of Fibre Finland
New Zealand	Beef and Lamb Genetics	1	Mid side sample	Farmer or classer sometimes wool preparation staff	Farmer	New Zealand Wool Testing Authority or SGS
Portugal	ANCORME - Associação Nacional Criadores de Ovinos da Raça Merina	22000	shoulder and hip	Technician		
Slovenia	University of Ljubljana, Biotechnical Faculty	1	in the middle of the left side of the belly	Technician	Technician	AAFT (www.aaft.com.au), UK
South Africa	Agricultural Research Concil	1	Midrib	Farmer	Farmer	Sa Fleece Testing Centre and Wool Testing Bureau SA
South Africa	SA Stud Book and Animal Improvement Association	1	Mid-rib	Farmer	Farmer	Wool Test Bureau Port Elizabeth
Uruguay	Inia	1	mid-side wool sample	farmer	farmer	SUL (IWTO)

Subindexes and traits

- Subindexes on wool (1 to 5)
 - Weights of elementary traits
- Trait names (1 to 5)
 - average phenotype
 - annual genetic trend
 - genetic parameters (genetic variance and heritabilities)
- Animals included in the wool sample collection
- Group of breeds (specialised, mountain or hill or lowland)
- Final comment

Subindex1

Country	Organisation	subindex1_wool	weight_subindex1_wool
New Zealand	Beef and Lamb Genetics	Dual Purpose Wool (Maternal breeds)	Fleeceweight only (usually greasy)
South Africa	SA Stud Book and Animal Improvement Association	Merino : Relative Economic Index; Dohne : General Merit	Merino : $0.09BW + 0.38 CFW - 0.33 FD + 0.05 SL + 0.15 TWW$ Dohne : $((WnMat + WnDir)*0.5)*3.95+(CFW*0.22)+(FD*-6.0)$ SA Mutton Merino :
Uruguay	Inia	Fine Merino	46% FD + 42% CFW + 12% YBW

Subindex2

Country	Organisation	subindex2_wool	weight_subindex2_wool
New Zealand	Beef and Lamb Genetics	Dual Purpose Wool Quality released 2020 replace the current indexes listed below	Micron and wool colour (additive with sub-index 1)
South Africa	SA Stud Book and Animal Improvement Association	Merino : Relative Economic Index Reproduction; Dohne Logix Merit Index	Merino : $-0.02BW + 0.35 CFW - 0.30 FD + 0.04 SL + 0.29 TWW$; Dohne : $0.2 WnDir + 0.1 WnMat + 0.3 CFW - 0.2 FD + 0.2 NLW$
Uruguay	Inia	Wool Merino	$29\% FD + 45\% CFW + 26\% YBW$

Subindex3

Country	Organisation	subindex3_wool	weight_subindex3_wool
New Zealand	Beef and Lamb Genetics	Mid Micron wool	Clean fleece weight, Fibre diameter
Uruguay	Inia	Merino Double propouse	18% FD + 43% CFW + 39% YBW

Subindex4

Country	Organisation	subindex4_wool	weight_subindex4_wool
New Zealand	Beef and Lamb Genetics	Mid Micron Wool Quality	Fibre Diameter CV, Staple length, Colour Y (brightness) and Colour YZ(yellowness)
Uruguay	Inia	Corriedale A	

Subindex5

Country	Organisation	subindex5_wool	weight_subindex5_wool
New Zealand	Beef and Lamb Genetics	Fine wool Quality	Fibre Diameter CV, Fibre curvature, staple length, colour y and colour YZ
Uruguay	Inia	Corriedale B6	

Trait 1

Country	Organisation	Phenotype	Average value	Genetic trend	Genetic variance
New Zealand	Beef and Lamb Genetics	Greasy Fleece Weight AT 12 MONTHS		g STd Dev = 0.293. 3.8% genetic gain as % of genetic std Dev.	gVAr = 0.0857, heritability = 0.35
Slovenia	University of Ljubljana, Biotechnical Faculty	Fibre diameter	29.88 microns (2018 and 2019)		
South Africa	SA Stud Book and Animal Improvement Association	Fleece Weight	Merino : 4.907kg (2019) Dohne Merino : 4.997		
Uruguay	Inia	Fiber Diameter Merino	15.65 (progeny 2018)	reducción 0.08 micron per year, 7%	Vg=1.256 h2=0.667

Trait2

Country	Organisation	Phenotype	Average value	Genetic trend	Genetic variance
New Zealand	Beef and Lamb Genetics	Fibre Diameter		gStd Dev= 1.518 gain as % of genetic ST Dev = 1.00	gVAR = 2.304 Heritability = 0.4 have been reestimated and changing in June 2020 to gVAR=1.6 and H = 0.63
South Africa	SA Stud Book and Animal Improvement Association	Clean Fleece Weight	Merino : 3.441kg (2019) Dohne : 3.316 (2019)	Merino : 0.058/year Dohne : 0.233/year	Merino : $V_a = 0.112$, $h^2 = 0.33$ Dohne : $V_a = 0.064$, $h^2 = 0.24$
Uruguay	Inia	CFW Merino	2.48 kg (progeny 2019)	0.023 kg/year 12%SDg	V_g 0.0598 $h^2=0.387$

Trait3

Country	Organisation	Phenotype	Average value	Genetic trend	Genetic variance
New Zealand	Beef and Lamb Genetics	Colour Y-Z (Yellowness)		g STd Dewv = 0.697, ave gain as % of gStd Dev= 0.289	gVAR = 0.486, Heritability =0.15
Uruguay	Inia	Shearing BW Merino	38.56 kg (progeny 2018)	0.229 kg/year 10% SDg	Vg 5.76 h2=0.374

Trait4

Country	Organisation	Phenotype	Average value	Genetic trend	Genetic variance
South Africa	SA Stud Book and Animal Improvement Association	Fibre Diameter	Merino : 17.10 um (2019); Dohne : 18.00 um	Merino : -0.051/year; Dohne : -0.054/year	Merino : $V_a = 0.6348$ $h^2=0.59$; Dohne : $V_a = 0.6095$ $h^2=0.46$

Trait5

Country	Organisation	Phenotype	Average value	Genetic trend	Genetic variance
South Africa	SA Stud Book and Animal Improvement Association	Staple Length	Merino : 103.79mm ; Dohne : 101.53mm	Merino : 0.0058/year; Dohne : 0.0022/year	Merino : $V_a = 47.9316$ $h^2 = 0.28$; Dohne : $V_a = 53.3379$ $h^2 = 0.31$

Animals within the breed included in the wool sample collection

Country	Organisation	Age	Animals
Finland	ProAgria Keskusten Liitto	over 1 year or 90-150 old lambs	Males and Females
Latvia	Agricultural Data Centre	9-18 month	Males and Females
New Zealand	Beef and Lamb Genetics	Can record, lamb yearling and ewes but mostly 8month - to 1 year of age	Mostly males - sometimes females
Portugal	ANCORME - Associação Nacional Criadores de Ovinos da Raça Merina	> 18 months (after the first shearing)	Males and Females
Slovenia	University of Ljubljana, Biotechnical Faculty	rams in the performance test for growth	Males
South Africa	Agricultural Research Council	+/- 12 months	Males and Females
South Africa	SA Stud Book and Animal Improvement Association	Year Old	Males and Females
Uruguay	Inia	one year old	Males and Females

Group of breeds

Country	Organisation	Specialised wool breed	Mountain, hill, lowland
Finland	ProAgria Keskusten Liitto		lowland
Latvia	Agricultural Data Centre	meat-wool breed	
New Zealand	Beef and Lamb Genetics	Small population of Corriedale (20-25 micron)	Most sheep (28- 40 micron) Some breeding finer within and across breed
Portugal	ANCORME - Associacao Nacional Criadores de Ovinos da Raca Merina	Merino	lowland
Slovenia	University of Ljubljana, Biotechnical Faculty		mountain breed
South Africa	Agricultural Research Concil	Specialised wool breed	
South Africa	SA Stud Book and Animal Improvement Association	Merino and Dohne Merino - Specialised wool breeds	Lowland
Uruguay	Inia	Corriedale, Australian Merino, Polwarth, Merilin, Dohne Merino	Romney Marsh

Shearing

Country	Organisation	Number of shearing	Time of year
Finland	ProAgria Keskusten Liitto	twice	spring and autumn
Latvia	Agricultural Data Centre	once	in spring or in fall
New Zealand	Beef and Lamb Genetics	Mixed age sheep - mostly shorn once a year or every 8 months, sometimes 2 times per year	lambs- 3-6 months, again as rising yearlings, pre mating at 17 months - then can be either annual as mixed age ewes, 8 monthly as mixed age ewes or sometimes 2 times per year
Portugal	ANCORME - Associacao Nacional Criadores de Ovinos da Raca Merina	once	march to july
Slovenia	University of Ljubljana, Biotechnical Faculty	once or twice	autumn or autmn and spring
South Africa	Agricultural Research Concil	Once	Spring and Summer
South Africa	SA Stud Book and Animal Improvement Association	Twice	March and September
Uruguay	Inia	once	spring

Comments

Country	Organisation	Comment
Iceland	The Icelandic Agricultural Advisory Centre	In Iceland are at the moment no collection of wool records. When lambs at 5 to 6 months old are judged (live assessment) they get visual score for wool quality. That score depends on quality of color, fineness of the wool and quantity. Then we have a small group (special strain (Feldfé)) with in the Icelandic breed, which is breed for goat quality. Lambs of this strain (Feldfé) get visual score for some wool traits according to coat quality.
New Zealand	Beef and Lamb Genetics	New Zealand does have a small population of stud Merino sheep but these are recorded on Australias Merino Select evaluation. With low wool prices three things are happening. 1. Increase in shedding breeds 2. Some studs of main breeds - breeding finer within breed or across breed 3. other - stay the same
Uruguay	Inia	Since 2005, National Genetic evaluations are conducted under the framework of the "National System of Sheep Breeding", an agreement between the Rural Association of Uruguay (ARU), the Faculty of Agronomy of the University of the Republic, the Wool Uruguayan Secretariat (SUL), and the National Research Institute for Agricultural (INIA). The latter two institutions are the responsible for carrying them out. Results are available in http://geneticaovina.com.uy/?ing
Finland	ProAgria Keskusten Liitto	We can send translated materials about evaluating wool in Finland.