



Visual Classing Merino Sheep



1. Objectives of sheep classing

Visual sheep classing is practised by all breeders and is essential to the quality of a woolgrower's flock and enterprise profitability.

Visual classing is quick, efficient, and cost effective for a large number of traits. It can be done at lamb marking, weaning, shearing, replacement selections and joining, although the major classing events usually take place with the annual selection of replacement ewes and rams.

The objective of sheep classing is to identify and retain those sheep in a flock that will improve flock returns both now and in the future through more productive progeny.

Improving productivity comes by increasing income and also reducing costs. Constant improvement is needed to overcome annual inflation increases to farm costs and competition from other enterprises. While productivity increases are the key, they should not make the animal more susceptible to disease, nor adversely affect doing ability, which leads to higher costs.

2. Issues to consider prior to visually classing sheep

There are several issues to address prior to classing sheep. They include:

- Reassess the overall environment in which the sheep are to run, the country, enterprise mix, flock structure, potential markets and management skills, then either create or review the breeding objective for that flock. Having a clear, well defined, targeted breeding objective for the flock is the first step to higher profitability. Neighbours and other breeders in a local region, climate or state will have very different legitimate breeding objectives. Correctly assessing the overall environment and particularly the country and management skills is a vital step.
- In developing your breeding objective be mindful of the compromises involved and the balance rather than extremes required. This involves setting both minimum and maximum targets for characters such as body weight, fleece weight, wool quality, fat and face cover. These targets will vary according to country, enterprise and assessment of future markets.
- Once the enterprise type (or production system), breeding objective and targets have been established, avoid chasing fads unless there are fundamental shifts in markets, skills set or enterprise mix. Surplus sheep sales are often the difference between being profitable or not, so having an established true to type and predictable, well regarded product is a valuable commodity.
- Classing should take place at the time when the sheep will best express or reflect its potential. For example:
 - Birth coat is best at lambing rounds or marking.
 - Fleece rot or dags when the trait is best seen, e.g. after the spring break or after summer rain.
 - Ewe hogget classing should be done when the ewes are a) as old as possible (so the confounding maternal effects of birth type, date of birth, dam type, rearing type are least expressed) and b) just pre joining and in as much wool as possible and when surplus sheep sales can be optimised. The longer the wool, the greater the variation in fleece weight is expressed and thus easier to assess differences.
 - Classing on reproductive performance needs to be carried out at several times throughout the year - after mating, lambing and weaning.

- Sheep that are to be classed as a mob should be run as a mob. Boxing mobs reduces the accuracy of classing or objective assessments. If the numbers of animals are too large to run in one mob it is important to class the mobs separately as paddock differences may need to be taken into account when classing.
- Sheep should be managed so they are given a good commercial opportunity to express their genetic potential. A mob of well grown sheep will exhibit greater variation and facilitate better classing decisions compared to a mob that has been held back either through health problems or lack of nutrition.
- Before classing commences look at the mob as a whole to get an idea of the 'type' and variation, as well as any faults that may need to be focused on. It is a good practice to assess a number of sheep, prior to making any classing decisions so as to best 'set the standard' and establish the range.
- Assess the history of the mob, their recent management, mob size and the number needed to be retained.
- Sheep should be classed in a handling race or classing box so that the entire sheep can be seen as well as handled.
- Depending on the animals being classed, factors such as birth type (single or twin), dam type (maiden or mixed aged), spread of lambing date and number of lambs raised, all have a significant impact on what you see in the classing race. The younger the sheep, the greater the impact these factors can have. Coloured ear tags can be useful to assist in identifying these factors without having to have detailed records to look up for every sheep.

3. Individual traits to consider

Whilst a sheep ends up in a single grade, such as tops, retained for flock, commercial sale or cull, the individual traits that need to be considered in a short time in order to come to that conclusion are numerous.

In essence, it is the wool features of the Merino that sets it apart from other breeds. In particular, the Australian Merino is unique in possessing a skin that produces an exceptional number of fine secondary wool fibres.

A list of traits, the characteristics to look for, and the economic importance of each, is included in the following table.

Merino flocks vary greatly between neighbours and regions. Some flocks earn 80% income from wool and 20% from sheep sales (e.g. superfine wools in high altitude, high rainfall, low VM country) while others can earn 30% from wool and 70% from sheep sales.

No sheep can be perfect for all traits so there need to be tolerances around each standard. The emphasis on traits and what is selected for and against vary between flocks. The table below should be seen as a guide and not be rigidly prescriptive for all flocks or environments.

There can be diverging opinions as to the importance of a trait, between traits, what they reflect, the clues to productivity they provide or the degree to which the trait is acceptable. Fit for purpose is an important concept. A trait may be essential in one area, preferred in another and of little impact in another.

4. Primary Reference Documents

The following references were reviewed in preparing this document. This document is largely a summary of these previous sheep classer and sheep breeder references

- Andersen L. **Visual Appraisal (Sheep Classing)**. Cassette recording. 1987
- Australian Association of Stud Merino Breeders Association. **Australian Stud Merino - Definition, Flock Status and Standards**
- Australian Fleece Judging Competition – **Fleece Judging Schedule**
- Crawford, J. **Breeding for Success..** In Sheep Breeding for the 21st Century. Victorian Stud Merino Sheepbreeders' Association Inc. 2001
- Crean, D. Bastian, G. **Selecting stock for breeding.** In Sheep Management and Wool Production. 1997. 1997
- D'arcy, J.B. **Sheep Classing and Merino Breeding.** In Sheep Management and Wool Technology. 1990.
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- Elliott, M. **Sheep Classing and Selection.** In Sheep Production. 1996.
- Government of South Australia. **Dark Fibre Control in sheep and wool.** Primary Industries and Resources SA. Fact Sheet.
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- Melbourne College of Textiles. **A Special Course in Merino Sheep Classing.** 1985
- Minter, R.D. **A Brief Description of the Features of a Merino Ram.** In Practical WoolClassing and Notes on Sheep. 1956
- NSW DPI. **Scoring Sheep for Fleecerot.** Primefact
- Padbury, T. **The Role of the Stud Breeder.** In Sheep Breeding for the 21st Century. Victorian Stud Merino Sheepbreeders' Association Inc. 2001
- SA Merino. **A Guide to Ram Selection and Ewe Classing.** Website.
- Scott, B. **Breeding objectives for the merino industry: industry perspective.** "Crochdantigh", Muckadilla, Queensland
- Sydney Morning Herald, **Saturday 10 August 1935, page 13.**

5. Combining Visual and Objective Assessments

Overwhelmingly ram breeders use both visual classing and objective assessments in sheep selection. Objective assessments include:

- Raw data assessments (raw on-farm data) e.g. kilograms fleece weight and body weight, microns for fibre diameter, mms for staple length, N/Kt for staple strength, pregnancy scanning lambing and weaning data, and visual scores (such as wrinkle from 1 to 5 score).
- Within flock variations to the mean (Rampower) % variations; e.g. 105% fleece weight and -0.5 microns
- Within flock breeding values (within Site Breeding Values, Australian Merino Sire Evaluation Association) Raw data adjusted for impacts of sex, dam age, rearing type influences etc
- Across flock breeding values (Australian Sheep Breeding Values, Sheep Genetics) Raw data adjusted for impacts of sex, dam age, rearing type, pedigree (performance of relatives) and linked to the across flock data base via the between year and across flock link sires

These assessments can be based on the animal's actual performance and also on how their progeny and other relatives have performed.

The most "measurement orientated breeders" place approximately a 50:50 emphasis on visual and objective classing. This estimate is based on the

difference between the theoretical rates of gain using measurement only and actual rates of gain by these "measurement orientated" breeders. At the other end of the spectrum it is estimated that some breeders place a 90:10 emphasis on visual and objective classing and something like a 60:40 to 70:30 emphasis is the norm.

There is a wide variation of views regarding how best to combine visual and objective assessments in sheep selection and the approach required changes in different circumstances between flock classing, stud classing, sheep judging, stud ram auction, on-property sales, internet catalogued sales and grade ram selections.

Sources of information include;

- Sheep Judging results see Stud Breeder Associations www.merinos.com.au
- Merino Bloodline Performance www.dpi.nsw.gov.au/agriculture/merino-bloodline-performance
- Rampower within flock data
- Contact Service Provider
- Australian Merino Sire Evaluation Association www.merinosuperiorsires.com.au
- Sheep Genetics www.sheepgenetics.org.au

CLASSING TRAITS

TRAIT NAME	PREFERRED CHARACTERISTIC	ECONOMIC IMPORTANCE
Muzzle	The muzzle should be soft, thick and large with wide nostrils.	The muzzle structure is an indication of overall bone and body size. Large muzzles indicate good bone through the sheep. Wide nostrils indicate good constitution and strength.
	The muzzle should be free of wool, coarse fibres and brown or black spots or smut.	Coarse fibres on the muzzle (or 'frosty-faced') is an indication of coarse wool and hairiness in the breech area, leading to high fibre diameter variation. Coloured spots or smut have been shown to be associated with pigmented wool fibres.
Face Cover	There should be sufficient bare wool growing areas around the eyes to enable good vision.	'Muffy-faced' sheep get wool-blind making management more difficult. Grass seed can be a significant health issue and production cost. Very 'bare-headed' sheep generally produce lesser fleece weights. Ewes with lower face cover generally have high reproduction rates.
Jaw	The jaw should be sound and the teeth on the lower jaw should align squarely with the pad on the upper jaw.	Undershot or overshot jaws lead to sheep having difficulties eating particularly when feed is short.
Eyes	Skin around the eyes should be free of coloured spots and eye lashes should not be ginger.	Ginger eyelashes have been shown to be associated with pigmented wool fibres. Black spots may be associated with pigmented wool fibres, however, this association is not thought to be as strong as with pigmented hair such as eyelashes.
Ears	Ears should be thick, soft and free of coloured spots or ginger tips.	Coloured spots or ginger tips on the ears have been shown to be associated with pigmented wool fibres. However this association is not as strong as with coloured spots or smut on the skin.
Poll	The poll recess should be free of heavy grease (yolk).	Wool grease in the poll area predisposes the sheep to poll strike. This problem has reduced significantly over the last 30 years.
	The poll should be free from coloured fibres.	Coloured fibres on the poll has been shown to be associated with pigmented wool fibres.

TRAIT NAME	PREFERRED CHARACTERISTIC	ECONOMIC IMPORTANCE
Horns	Horns should be thick at the base and not too tight against the head or too wide.	Thickness of the horn is an indication of bone and size. Growing away from the head reduces the possibility of restricting jaw movement, flystrike and makes shearing easier. Very wide horns make drafting more difficult and require more frequent horn trimming.
	Each horn site should be set well apart.	As a ram matures and the horns thicken in diameter, if the horns are too close, a skin wrinkle can form which is prone to flystrike.
	Horns should be free of black streaks.	Black streaks may be associated with pigmented wool fibres. However, this association is thought to be not as strong as with pigmented hair.
	Scurs should be short and not attached to the skull.	There is a preference for no scurs or horns for live boat wethers to avoid damage in the grating. Poll sheep generally have lower risk of poll strike. Poll sheep don't need horn trimming, reduce labour and injury risk to labour.
Feet and Legs	Feet and legs should be straight and sound. Legs should show no sign of closeness (hocky). Feet should not splay sideways and pasterns should not be laid back or too straight. Front legs should be wide set to house a roomy chest.	Sound feet and legs are important for effective grazing. This will affect their production when seasons are poor. Sheep with hind leg faults are more susceptible to urine and dag stain and therefore higher risk to flystrike. Poor feet and legs can impact on a ram's dexterity during joining. Narrow chested animals are to be avoided.
	Hind legs should be well covered down to the pastern and front legs covered to the knee.	Sheep that are not well covered down the legs are generally lighter fleece cutters. In high grass seed country barer legs can be an advantage.
Hooves	The hooves should be straight and not splayed outwards, crossed, or rolled over.	Poor hoof conformation leads to poor mobility and an inability to adequately graze over large areas. This will affect their production when seasons are poor.
	The hooves should not have black streaks.	Black streaks may be associated with pigmented wool fibres. However this association is thought to be not as strong as with pigmented hair.

TRAIT NAME	PREFERRED CHARACTERISTIC	ECONOMIC IMPORTANCE
Neck	The neck should extend from the withers. The neck folds should be balanced and free flowing.	A well balanced and set neck is an indication of balance and length throughout the sheep. A long neck often points to a long body. Tight neck folds can increase shearing costs and second cuts.
Withers	The withers should be level with the back. The withers should avoid being raised and pointed (peaked wither) but should also avoid being set too wide and causing a hollow dip between the shoulders or too narrow which can lead to hollowness ('devils grip').	High withers can cause a hollow behind the wither that can predispose the wool to fleece rot and flystrike. If the shoulders are set too wide apart a hollow between the shoulder blades can also increase the risk of fleece rot and flystrike.
	The wool on the withers should show no signs of dryness and the staples should be dense.	Dry wool in the wither area will increase the risk of fleece rot and flystrike and a fleece that lacks density in this area will be exposed to dust penetration and weather damage.
Shoulders	Shoulders should be set wide apart and be broad but not too wide as that can also lead to structural problems. Toes, legs and shoulders should be well vertically aligned.	A sheep that is narrow through the shoulders will be generally narrow throughout. Good width of body increases wool cutting area and carcass weight.
Backline	The backline, or topline, should be long, level and square.	Good length of body increases wool cutting area and carcass weight.
	As one of the main wool producing areas of the sheep, the wool should be well nourished with good character. The staples should be dense and not falling open.	Sheep with loose stapled backlines will be exposed to dust penetration and weather damage.

TRAIT NAME	PREFERRED CHARACTERISTIC	ECONOMIC IMPORTANCE
Ribs	The ribs should be well sprung, round (not slab sided) and deep.	Well sprung ribs indicate good constitution and a sheep that has depth through the rib area maximises wool growing area.
Hips and Rump	The hips should be square and the rump should extend from the pin bone to the tail without drooping.	Drooping rumps can impact on back leg conformation.
Belly	The belly should be well covered with wool that is of good quality and denseness. It should not be coarse or show signs of hair.	Wool coverage and quality on the belly is an indication of overall coverage (fleece weight) and quality.
Testicles	Testicles should be large and firm.	Large testicles indicate higher daughter fertility, reproductive performance and firmness a sign of testicle health.
	The scrotum should have some wool coverage but not be excessively woolly.	Rams with bare scrotums tend to lack wool coverage over the body however woolly scrotums can increase adverse impacts of grass seed, shearing cuts and clean shearing.
Teats and Udder	The udder and teats should be functional, symmetrical, free from structural defects and abnormalities.	Any damage or abnormality of the udder or teats will reduce lamb milk supply. Such damage could occur from crutching or previous mastitis etc.
	The udders should not be excessively woolly.	Excessively woolly udders make it difficult for lambs to find the teats, particularly in high dag country.
Trueness to Type	Regardless of how good a sheep is, true to the type or evenness can be important.	Having a line of sheep that are consistent or evenly good for highly preferred traits can add value to both production and resale value.
Fibre Diameter	Fibre diameter can be visually selected through crimp frequency and handle. Softness and higher crimp frequency is associated with lower fibre diameter. Visually selecting for fibre diameter can be unreliable.	Fibre diameter should be selected in balance with other traits, particularly fleece weight.

TRAIT NAME	PREFERRED CHARACTERISTIC	ECONOMIC IMPORTANCE
Staple Strength	Staple strength is best visually assessed post shearing on the fleece itself, ensuring to test several sites over the fleece. Visually selecting for staple strength can be unreliable.	Staple strength can be a major determinate of wool value. It needs to be selected in balance with other traits.
Wool Style	Wool style is a combination of evenness of crimp formation (evenness of crimp along staples, between staples, and over the whole fleece) handle and colour. A consistent and pronounced crimp throughout the fleece is desired and it is this character that helps define an Australian Merino.	The style of the wool should be as good as is required for the environment. Whilst many types of wool do not attract premium for style in the wool market, better style wools are less prone to fleece rot and flystrike thus delivering more wool into the main fleece lines and can attract less discounts in a poor market.
Wool Density	Fibre density in the fleece should be high, but also be in balance with good staple length and free growing wools. Sufficient density reduces wool faults and contamination, and aids yield.	Sheep with a dense fleece will cut more wool than sheep with a thin or open fleece. Dense fleeces are better at keeping out dust and reducing staple weathering. Beware of sheep that have very dense, short, tight wool. These sheep are often the first to suffer in poor seasons.
Fleece Length	Length – the staple length should be consistent with the type or strain of Merino selected. Typically, annual growths of over 100mm for ‘strong wool Merinos’ and over 75mm for ‘fine wool Merinos’ should be aimed for. Short wools should be avoided.	Staple length makes a big difference to the overall cut of the fleece and selection should aim for sheep with long free growing wools.
Handle	Softness of wool (handle) is a preferred attribute for a range of wool style and quality issues. Handle refers to the feel of the wool. It has two components - ‘smoothness’ and ‘compression’. Different wool end uses have different handle requirements.	Harsh handling wools should be avoided as they tend to indicate broad fibre diameter for the crimp frequency. Handle is associated with fibre diameter, crimp or fibre curvature, and the scale structure of the fibres.

TRAIT NAME	PREFERRED CHARACTERISTIC	ECONOMIC IMPORTANCE
Condition	Skin secretions of wax and suint on the wool, often referred to as nourishment. Nourishment protects the fibre from sun and water damage.	(i) Wax: wool fibres should have an adequate coating of wax for protection against weathering, sunlight and excessive rain. Wax is also important for fibre lubrication and hence handle. Insufficient wax results in dry wool and excessive wax results in low yielding wool. (ii) Suint: high levels of suint attract moisture, produce unfavourable odour and cause colouration of wool fibres, making the sheep more susceptible to fleece rot and flystrike.
Tip	The tip of the fleece should not be dry or overly nourished. Opinions vary between blocky and pencil tips.	Dry tips can increase wastage and noil, and reduce yield during processing. Heavy tipped sheep produce low yielding wool and can lack tip formation which allows dust penetration and weathering to occur.
Staple Formation	Staple formation can vary from well-formed blocks to pencil like staples.	There are varying views on what is most sought after as far as staple formation is concerned.
Wool Coverage	A good covering of wool of good length and density should extend around the body.	A balance is required between heavily covered points and very bare points, head, legs, brisket and belly.
Wool Colour	Wool colour should be white, bright and not yellow or dull.	Bright wools have a better ability to withstand excessive moisture and are more likely to be included in the main fleece lines at shearing. Sheep with yellow wool are more susceptible to fleece rot and flystrike and produce lower value wool. Yellow colour could also be an indication of suint. (see condition)
	In medium and strong wool sheep, a degree of creaminess in hoggets is acceptable.	Medium and strong wool type sheep with some level of creaminess in the wool as hoggets are acceptable as they tend to have more nourishment in the wool and maintain a higher level of grease as the sheep get older. This is often associated with high fleece weights.
Skin	Skin should be loose and soft and have good blood supply which is indicated by a deep red colour.	Soft skinned sheep produce soft handling, free growing wools.
Fleece Rot	Fleece rot is the presence of a band of stain and/or crusting in the wool that results from fleece rot bacteria multiplying under humid conditions.	Sheep susceptible to fleece rot are susceptible to flystrike. Wool can be permanently stained by the bacteria and is of very low value.

TRAIT NAME	PREFERRED CHARACTERISTIC	ECONOMIC IMPORTANCE
Dermatitis (Lumpy Wool)	Dermatitis is a disease caused by bacteria that infects the skin and causes scab formation. Hard scab masses lift from the skin with the fleece as it grows, causing the characteristic 'lumpy wool'.	Dermatitis causes loss of condition and deaths in affected mobs, reduced skin values, reduced wool value and additional handling and treatment costs. Dermatitis infection also attracts flies, making flystrike more likely.
Pigmented Wool	Any sheep with pigmented wool, either 'random spots' or 'black lambs' should be culled.	'Black lambs' are caused by a recessive gene meaning that for one to exist, both parents need to carry the gene. Rams throwing 'black lambs' should also be culled. The genetic association of 'random spots', which can be black, brown or grey are not clear. It is known they are not related to the recessive 'black lamb' gene. Random spots within the flock pose significant risk to contaminating the wool clip.
Urine and Dag Stain	Sheep carrying excessive urine or dag stain should be culled.	Sheep displaying excessive urine or dag stain are susceptible to flystrike. Urine stain may be caused by an injury to the vulva. Even small amounts of stain contamination can impact on wool prices.
Wrinkles	Excessive wrinkles, in particular those on the jowl, neck and breech can increase costs and affect returns.	A large amount of jowl and neck wrinkle predisposes the sheep to grass seed contamination. Breech wrinkle predisposes sheep to breech flystrike. Sheep with more wrinkle tend to have higher fleece weight, so achieving the right balance between degree of wrinkle and fleece weight varies depending upon the breeders objective. Lower wrinkle is associated with higher fertility. The amount of wrinkle on the neck, body and breech tend to be related.
Reproduction	The most cost effective way to select for reproduction is through classing ewes on whether they became pregnant, and if so, whether they raised a lamb. This can be done firstly through pregnancy scanning and then wet and drying at weaning.	An increase in reproduction leads to higher surplus sheep sales but needs to be balanced against the need for higher levels of ewe nutrition.
	Selecting larger ewes will increase reproduction rates.	Heavier sheep tend to have more lambs but they also require more feed for maintenance.
	Selecting ewes with above average fat cover, or 'good-doers', will aid in increasing reproduction rates, surplus sheep sales and management flexibility.	Good doing ewes will get in lamb earlier and raise a lamb more easily than a ewe that is a poor doer. The ability to put down fat cover that can be drawn on as energy reserves when the season is poor is critical to being a good doer.





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