

Australian/New Zealand Standard™

Wool—Fleece testing and measurement

Method 1: Weighing and sampling greasy wool for fleece testing and measurement

PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee TX/12, Wool to supersede AS/NZS 4492.1(Int):1997.

This Standard relates to a method of obtaining a sample of greasy wool which may be put to several uses. The major use is to provide suitable material for measurement of washing yield or mean fibre diameter on single fleeces, for fleece testing application in sheep selection programs and the classing of fleeces into diameter groups prior to sale.

The measurements should be regarded as relative, not absolute values, and they should only be used for within-flock comparisons.

METHOD

1 SCOPE This Standard sets out a procedure for weighing individual fleeces and for obtaining a representative sample of greasy wool from an individual sheep.

2 OBJECTIVE The objective of this Standard is to provide the wool industry with a method of weighing and sampling greasy wool from sheep for the purpose of fleece testing.

3 APPLICATION

3.1 General The sample may be used for the measurement of washing yield, mean fibre diameter and diameter distribution as described in this series of fleece testing Standards. The sample may also be used for the measurement of staple length, staple strength, position of break, resistance to compression, bulk, colour, wax and suint.

While samples may be taken from different parts of the fleece, research*† has shown that the midside must be used when estimates of the fleece mean for washing yield, mean fibre diameter and fibre diameter distribution are required. However, other sites can be used for the ranking of animals, provided the sampling site is consistent between animals.

* HANSFORD, K.A. Fibre diameter distribution: Implications for wool production. *Wool Technology and Sheep Breeding*. 1992, vol 40, no. 1.

† TURNER, H.N., HAYMAN, R.H., RICHES, J.H., ROBERTS, N.F. and WILSON, L.T., Physical definition of sheep and their fleece for breeding and husbandry studies with particular reference to merino sheep. *CSIRO Div. Report. No. 4 (Series S.W. - 2)*. 1953.

3.2 Comparison of sheep on basis of fleece weight and other wool measurements

When direct comparison between sheep is to be made on the basis of fleece weight and other wool measurements, those sheep shall be from the same drop (age group); they shall have been run together under the same conditions for the period of wool growth for which the measurements refer; and all wool samples shall have been taken from the same site on each sheep.

3.3 Measurement of greasy fleece weight and washing yield To achieve reliable estimates of the relative genetic merit of sheep for greasy fleece weight, sheep should be at least 10 months of age and should have previously been shorn as weaners (3 to 4 months of age) to minimize the effects of spread of lambing date, birth type and age of dam on variation in greasy fleece weight. The fleeces for measurement should have at least 6 month's wool growth.

3.4 Measurement of fibre diameter To achieve reliable estimates of the relative genetic merit of sheep for fibre diameter, sheep should be at least 10 months of age. The fleeces sampled for measurement shall have at least 6 month's wool growth.

NOTE: Research* has shown that the repeatability of rankings based on measurements of greasy fleece weight is low if merino sheep are shorn and measured at 10 months of age without previously being shorn as weaners. This was not the case for fibre diameter measurements.

4 REFERENCED DOCUMENTS The following documents are referred to in this Standard:

AS

4054 Scourable branding substances for greasy wool

4175 Wool—Glossary of terms relating to the testing of raw wool

5 DEFINITIONS For the purpose of this Standard, the definitions given in AS 4175 and those below apply.

5.1 Check mass—a mass of a known value used to check the operation of a balance.

5.2 Greasy fleece weight—the mass of greasy wool shorn from the sheep prior to skirting, excluding the belly wool.

5.3 Midside sample—the wool cut from an area approximately 100 mm × 100 mm, which is centred on the third last rib, halfway between the mid-line of the back and the mid-line of the belly on the left hand side of the animal. See Figure 1.

NOTE: When the measurement of washing yield and clean fleece weight is required, the sample should be taken from the left side. Samples taken from the right side may have a higher level of contamination by vegetable matter and dust, because sheep normally rest on their right side while lying down.

5.4 Sample—the wool cut from an area approximately 100 mm × 100 mm, which is of sufficient mass for the test(s) to be undertaken.

5.5 Sample integrity—the maintenance of the identity and validity of the sample as representative of the bulk from which it was drawn.

6 PRINCIPLE When greasy fleece weight is required, each fleece is weighed. When further tests are required, a sample of similar mass is taken from the same site on each sheep.

* ROGAN, I.M., ATKINS, K.D. and COELLI, K.A. Shearing merino ram weaners - Is it worth it? *Wool Technology and Sheep Breeding*. 1995, vol 43, no. 1.

7 APPARATUS The following apparatus is required:

- (a) A set of scales capable of measuring to 20 kg in increments of 0.1 kg for the measurement of greasy fleece weight. Suitable scales include a pan balance or a fleece rolling table with an in-built balance.
- (b) Check masses of 1 kg and 15 kg.

NOTE: Check masses may be purchased. Masses of 1 kg ± 100 g, and 15 kg ± 1 kg are acceptable, provided the actual mass of the check mass is known to ± 20 g. Alternatively, check masses may be made from brass, stainless or painted steel. The check masses should be weighed on a digital-readout balance which has a current stamp for use as suitable for trade measurement, and the weight recorded. Such balances may be found in local retailers such as butchers' and greengrocery shops. The check mass should be re-weighed at least annually, and always re-weighed if damaged.

- (c) A suitable device for cutting wool, e.g. a shearing hand piece or a pair of 'Oster'* type clippers.
- (d) A suitable marking substance to identify the perimeter of the sample area.

NOTE: The substance should comply with AS 4054.

- (e) Suitable containers and labels to ensure the integrity of the sample taken. If samples are required for yield testing, containers shall be sealed to prevent changes in moisture content.

NOTE: Placing the sample in a plastic bag, squeezing the air from the bag and sealing the plastic bag with a rubber band is usually sufficient to prevent moisture changes which may affect washing yield and the calculation of clean fleece weight.

8 PROCEDURE FOR SAMPLING AND WEIGHING

8.1 General The following shall apply:

- (a) The sample shall be taken directly from the sheep or later removed from the shorn fleece.
- (b) When the sample is required to be taken directly from the sheep, the sample site shall be clearly marked while the sheep is in a standing position. (refer to Clause 5.3).
- (c) The wool sample shall be taken from the marked area and shall include all marked wool.
- (d) All samples shall be of similar mass.
- (e) For any given group of sheep, all those in the group shall be sampled using the same procedure from the same site on each sheep.

NOTE: For full-length wool, a sample area 100 mm $\times$ 100 mm will usually provide a sample of suitable mass of approximately 50 g for all tests. For 6 month's wool growth, a sample area 140 mm $\times$ 140 mm will usually provide a sample of similar mass.

8.2 Sampling from the sheep The procedure shall be as follows:

- (a) Locate the sampling site on the standing sheep.
- (b) Shear the sample area as close to the skin as possible with an appropriate apparatus.
- (c) Uniquely identify the sample and store it, ensuring that sample integrity is maintained.

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