MEAT & LIVESTOCK AUSTRALIA

APPENDIX C:

LANGUAGE USED IN THE AUSTRALIAN WOOL INDUSTRY

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Technical papers for the Australian Beef Language 'WHITE PAPER'

Published by Meat and Livestock Australia, Sydney.

June 2016

Pattinson R (2016) Language used in the Australian Wool Industry. Technical papers for the Australian Beef Language 'White Paper'. Meat and Livestock Australia, Sydney, 12 Pages

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CONTENTS

KEY POINTS

- Over 98% of Australian wool is exported
- The pipeline for Australian wool is long and complex – from farm to consumer product. Change of ownership is frequent
- The product is modified at each stage in the pipeline and the language changes accordingly
- For most raw wool, over 95% of price variation can be determined by measured (and unmeasured) characteristics
- Over 25 years ago some in the industry thought it was on the verge of 'sale by description' (selling wool without viewing a sample). That hasn't happened to any great extent because of the purchasers desire to see a sample, especially for unmeasured characteristics (e.g. style)
- An emerging market issue (mulesing) was quickly incorporated (voluntarily) into the language when needed
- The greatest determinant of price of raw (greasy) wool also has a large impact on consumer product quality. It features in product language in different forms throughout the pipeline
- The IWTO plays an important role in establishing the rules for the trading of wool products through the pipeline. This may be of relevance to red meat
- A certification mark (the Woolmark) is licensed to a range of wool manufacturers and provides assurance to consumers in relation to wool content and a range of product characteristics.

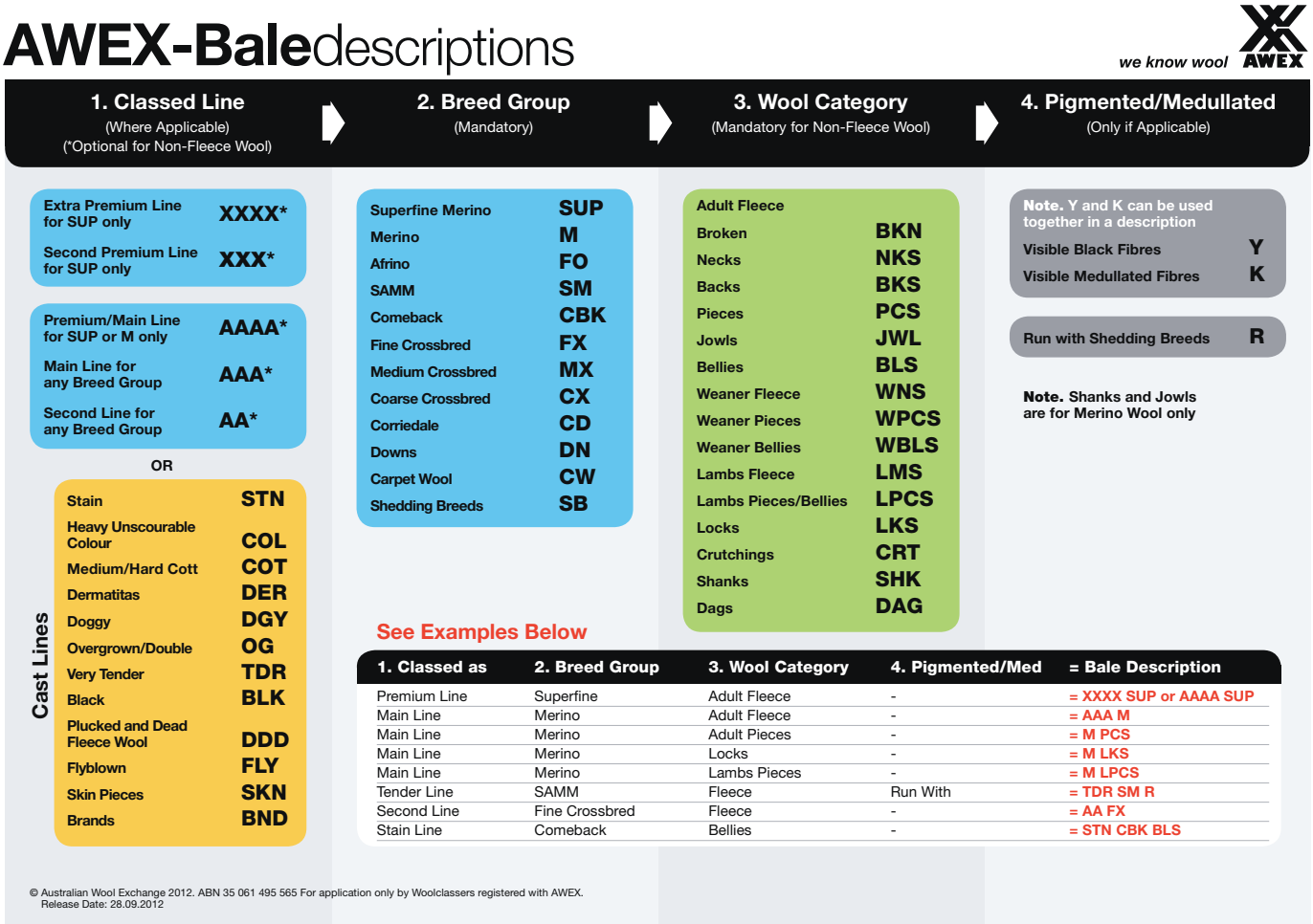
WOOL CLASSING

The wool industry language starts in the shearing shed where wool is classed by a registered woolclasser. The Australian Wool Exchange (AWEX) registers woolclassers and oversees clip preparation standards which are detailed in the Code of Practice (Anon 2016).

The functions of the woolclasser and thus the language used can best be described by the descriptions used on bales of wool (called lines). These are shown below and have been taken from the Code. Coverage includes:

- Breed
- 'Type' of wool (e.g. main fleece wool, skirtings, locks etc)
- Estimated fibre diameter, length, strength etc
- Imperfections or impurities

Figure 1: Bale descriptions for Australian wool



A description of the classed wool is entered on to the Woolclasser's Specification which also incorporates the National Wool Declaration (for issues such as Dark Fibre Risk and Mulesing status) (Anon 2016). As a case in point, Mulesing Status was quickly introduced in 2008 (as a voluntary option) into the language in response to market pressures.

The handling agent (usually a broker) uses the Woolclasser's Specification to assist them in making lotting decisions for subsequent sale.

RAW (GREASY) WOOL

Once the wool has been prepared it is offered for sale primarily via public auction. Approximately 85% to 90% of shorn wool is offered by woolgrowers through the auction system via a selling broker. Between 10% and 15% of wool is purchased privately from the farm, mainly by private treaty wool merchants.

Each selling broker publishes an auction sale catalogue for a nominated sale. The catalogue contains pages of sale lots each of which is sold as one unit and will vary in size, quantity and type. The information provided for each lot changes considerably from that provided by the woolclasser as it includes a range of objective measures including (Anon 2016):

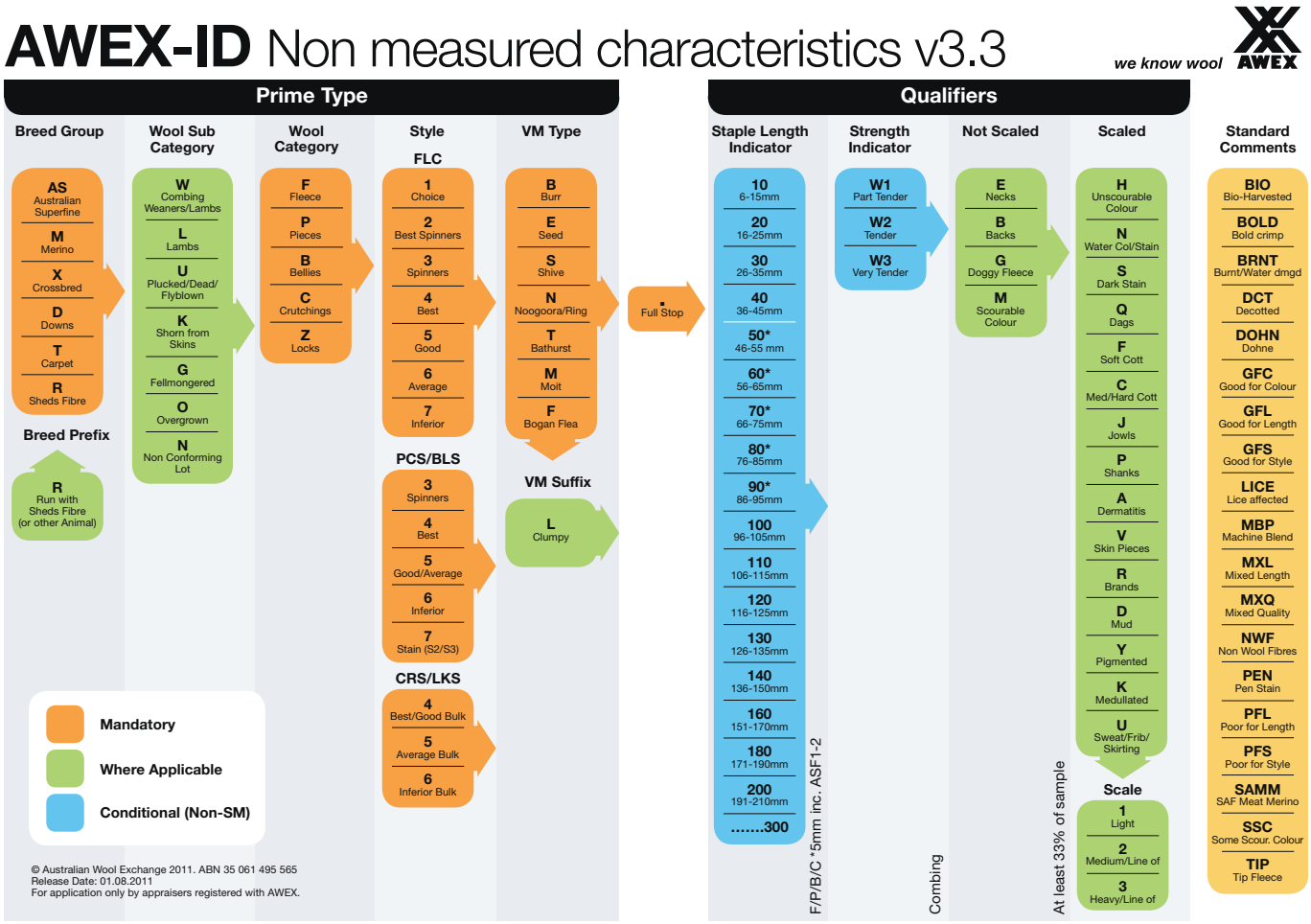
- The wool grower's farm or property brand (e.g. DIMBOOLA)
- The number of bales in the lot (e.g. 6 bales)
- The total greasy and clean weights (in kilograms) of the lot
- The wool description by the wool classer (e.g. AAAM)
- Objective test results such as:
  - Mean fibre diameter (MFD) 18.7 micron
  - Coefficient of variation MFD 19.8%
  - Vegetable matter content (VMB) 0.7 %
  - Yields (SCH, JCSY, SCD, ACY) 73.6 %
  - Staple length (S/L) 87 mm
  - Staple strength (S/S) 44 N/Kt
  - Position of break (POB) TIP/MID/BASE 17%/22%/61%
  - Certificate type P
  - Wool Selling Area (WSA) N24
  - As well as grower supplied information in relation to mulesing status etc.

Figure 2: Example of a wool sale catalogue

B/S/H	ACY	JCSY	SCD	SCD	SCH	VMB	MIC	S/L		S/S	POB			SS25	LOT	BLS
MULES			17%	16%	DRY	NETT		MM	CV%	N/KT	T	M	B	DMFR	No	
0.0	70.8	74.6	76.7	76.0	73.6	0.7	18.7	87	16	44	17	22	61	31	C4001	2
0.7	254	268	275	273	264	359	19.8%							1		
0.0								DOMBOOLA							P	
								N24 AAAM								
0.1	62.9	66.8	68.4	67.8	65.8	0.4	17.2	53	18	0	0	0	0		C4002	1
0.3	118	125	128	127	123	187	22.7%							1		
0.0															P	
								AAAM								
0.3	63.2	67.1	69.1	68.5	65.9	0.7	18.5	94	12	50	7	36	57	40	C4003	2
0.4	231	246	253	251	241	366	20.0%							NA		
0.0								<JL>/HAZELDEAN							P	
								N24 AAAM								

In addition to this information, AWEX-accredited appraisers (mostly broker staff) also apply an Industry Description (AWEX-ID, see Figure 3) to describe the appraised, non-measured characteristics of the wool (such as style, impurities etc.). When combined with the objective measurements on the lot this provides a complete product description which is used by brokers and some buyers. Samples of each lot are displayed to allow buyers to inspect the lots and assess the non-measured characteristics. Some buyers use their own typing to complete the product description, rather than using AWEX-ID. AWEX-ID is also used as the basis for market reporting.

Figure 3: AWEX ID (Anon 2016)



It may be of note that over 25 years ago some thought the industry was on the verge of 'sale by description' (selling wool without viewing a sample). That largely hasn't happened because of the purchasers' desire to see a sample, especially for unmeasured characteristics (e.g. style).

WOOL PROCESSING

Once wool is sold, there are two primary processing routes. The processing route is primarily determined by the length of the fibre, with longer wools going into the worsted system (yarn that features a smooth texture and finish) while shorter wools go into the woollen system (yarn that is used in the production of bulkier garments). Garments produced using the worsted system have a crisp, smooth appearance and include the typical suiting fabrics as well as fine wool knitwear. The woollen system produces garments which are bulkier with a soft, fuzzy appearance such as lambswool sweaters and tweed fabrics.

As wool moves through the pipeline its structure is modified considerably and the language changes at each stage. Some of these changes in the physical characteristics of the wool can be predicted from the greasy wool measurements, especially mean fibre diameter (which is also the most important raw wool characteristic) as this is usually only marginally changed during processing and has a big impact on final product quality.

TOPMAKING

'Top' refers to a strand of longer fibres that have been straightened, made parallel and separated from the shorter fibres by combing.

Using the objective measurements of the greasy wool combined with subjective appraisal and the knowledge of the processing mill, characteristics of the top (or carded product in woollen system) are predicted. At the top stage the language used alters to describing the characteristics of the top required by the processor covering:

- Top yield / noil
- Mean fibre diameter and co-efficient of variation
- Fibre length characteristics such as Hauteur and Coefficient of Variation of Hauteur
- Colour
- Fibre strength (bundle tenacity) (but only when the fibres may have been damaged, for example by dyeing)
- Contaminants and faults including any remaining vegetable matter (VM), dark fibre, neps, slubs, coloured fibre and other impurities
- Total fatty matter (TFM) - a combination of what was left on the wool after scouring and what oils were added in topmaking.

SPINNING

Spinning is the process by which wool fibre is turned into yarn – fibres are drawn out and twisted together to form yarn. Parameters of yarn (and thus the language used in the specification) can include:

- Yarn appearance – including any imperfections such as neps (tightly tangled mass of unorganised fibre), slubs (an abruptly thickened place of yarn), thick and thin places
- Yarn evenness – variation in the linear density of a yarn
- Linear density of yarn – fineness (mass per unit length)
- Strength testing – force required to break a single strand of yarn of unit length
- Twist testing – both direction and number of turns per unit length

KNITTING AND WEAVING

There are three main types of knitting in the Merino wool industry: complete garment knitting; fully-fashioned where knitted panels are linked together to make knitted garments; and fabric from circular knitting which is cut into panels and made into garments.

Weaving is the process of fabric formation in which 'warp' and 'weft' yarns are interlaced using a weaving machine (loom).

Specifications for yarn will depend on both the type of product to be produced and the equipment to be used.

Yarns specifications focus predominately on yarn count which is defined by the yarns weight and fineness. While there are a range of specification systems the most widely used is Nm which is the length in metres per 1 gram of mass – the finer the yarn the high the Nm. The following table provides a summary of typical knitwear yarns [Australian Wool Innovation (nd, a)].

For weaving yarns, specifications are for both count and twist.

Figure 4: Yarn types by fibre diameter

TYPICAL FIBRE QUALITIES OF MERINO WOOL KNITWEAR YARNS

	17	18	19	19.50	20	21	22	23	24	25	26	27	28	29	30
WORSTED SPUN YARNS	Merino Extrafine 2/24 to 2/48Nm														
	Pure Merino wool														
								Other 2/14 - 2/32Nm							
	58 - 70mm length														
			Lambswool blend 2/24 to 2/48Nm												
			55 - 65mm length												
WOOLLEN SPUN YARNS	Pure Lambswool 2/15 to 1/27Nm 35 - 55mm length					Lambswool blends 2/12 to 1/14Nm 40 - 50mm length				Soft Shetland 2/12 to 1/14Nm 48 - 60mm length				Shetland 2/8 to 2/12Nm 48 - 60mm length		

PRODUCT CHARACTERISTICS

Knitted or woven fabrics are then converted into consumer products. The language used at product level will be a combination of product type and characteristics, retail brand and of course price.

Fibre diameter is the key driver behind product softness and feel, so a scheme has been developed and introduced both for wool suiting fabrics and wool suits known as the Super S scheme. The Super S scheme comprises a range of numbers ranging from Super 80's to Super 250's. The higher the "S" number, the finer and hence softer the wool. For example a Super 80's denotes that the maximum mean fibre diameter does not exceed 19.75 microns, whilst at the other end of the scale, a Super 250's label denotes that wool with a mean fibre diameter less than 11.25 microns has been used.

Wool products that carry the Woolmark are subject to The Woolmark Company's quality standards, which are backed up by Woolmark test methods.

THE WOOLMARK COMPANY

Woolmark specifications cover five areas of performance:

- Wool content
- Physical properties related to wear performance (tensile strength, burst strength, abrasion resistance, seam slippage, pilling etc.)
- Colour fastness
- Dimensional stability in relation to 'care claims'
- Visual appearance upon manufacturing

IWTO

The wool industry is served internationally by the International Wool Textile Organisation (IWTO) which is a non-profit, private sector organisation representing the interests of wool industry stakeholders at an international level. Its membership covers the woolgrowers, traders, primary processors, spinners and weavers of wool and allied fibres in its member-countries, as well as all kind of organisations related to wool products and the wool business in general [Anon (nd b)].

Through IWTO the industry has developed commercial test methods, regulations and conditions under which most of the world wool trade conducts its business. There are three primary elements:

- IWTO Arbitration Agreement (Blue Book) – The Blue Book is the basis for the conditions under which most of the world wool trade conducts its business. The rules contained in it are agreed between those who are involved in the buying and selling of the various wool-textile products. The Blue Book incorporates the International Wool Textile Arbitration Agreement, used as a dispute settlement tool for conflicts arising between partners from different countries.
- IWTO Specifications (Red Book) – IWTO Specifications include all test methods and draft test methods developed within the Committees of IWTO for the measurement of wool fibre, yarn and fabric properties. Full Test methods provide the objective, technical and scientific measurements required for issuing IWTO test certificates.
- IWTO Regulations (White Book) – IWTO Regulations define the sampling and certification procedures and detail the procedures for resolving disputes in relation to certified test results. Hence they are important to the application of IWTO test methods in commercial trading.

IWTO also undertakes a role in laboratory licensing, market intelligence / statistics and helping coordinate specific marketing programs.

REFERENCES

Anon (2016) Code of Practice (COP). AWEX (http://www.awex.com.au/woolclasser/code-of-practice-cop/ accessed on 11/6/2016)

Anon (nd b) http://www.iwto.org/about-iwto/

Australian Wool Innovation (nd, a) Australian Merino Wool. *Introduction to Knitwear Training Manual*. http://www.woolmark.com/knowledge/training-manuals/

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