

Topmaking

To define topmaking, it is the art/science of blend engineering. Most exporters carry out the topmaking function and all combing mills will have a topmaker on their staff.

The skill and art of topmaking or “blend engineering” is the ability to mix and match farm lots to meet specifications at specific price points.

The topmaker can be regarded as the “cook” in the wool combing industry. He takes different farm lots and blends them to meet the specifications and price restraints placed on him by the combing mill, much the same way as a cook takes flour, butter, sugar, eggs etc. to bake a cake. If the chef wants a chocolate cake he must add chocolate in the same way as the topmaker can and probably will add pieces or skirtings to a blend if the end product is to be used for dark suiting fabric. In another example, the topmaker will only need to use low diameter fleece wool if the top is to be used in pastel shade next-to-skin knitwear. The analogy between cook and topmaker is a very apt one.

Objective measurement improved the precision of topmaking, by reducing appraisal errors for individual attributes, to the extent much can now be carried out using computers. Many topmakers and combers still use a proportion of non-measured wool in blends to reduce costs particularly when using cross bred types but this reduces predictability and increases the risk in not meeting specifications.

Despite the belief of some woolgrowers that topmaking is down-grading “good” wool it is necessary to blend to meet the specifications of a consignment at a given price. Quality is defined as “fit for purpose” and the 2 separate criteria, goodness of fit and price, are intrinsically linked. It is important to understand, you can’t have one without the other, when talking about quality in topmaking.

1 Use of Prediction in Topmaking

The TEAM (1980's) group of prediction formulae improved predictability which lowered risk levels for topmakers. Topmakers rely heavily on prediction formulae. In most cases they use the TEAM 2 formulae (see below) with specific mill correction factors. Some mills have designed their own specific formulae and in time the TEAM 3 formulae will gain more use.

- $Ha = 0.52 SL + 0.47 SS + 0.95 D - 0.45 VM - 0.19 M^* - 3.5 + \text{Mill Adjustment}$
- $CVHa = 0.12 SL - 0.41 SS - 0.35 D + 0.20 M^* + 49.3 + \text{Mill Adjustment}$
- $Romaine = - 0.11 SL - 0.14 SS - 0.35 D + 0.94 VM + 27.7 + \text{Mill Adjustment}$

There are two elements to predictability and they are:

- Closeness to actual result, and
- Spread of "error"; the difference between the Actual and Predicted result.

Improved understanding and efficiencies of cards and combs allows the topmaker to fine-tune purchases and optimise raw material price. Raw wool attributes can be manipulated to take advantage of the price relativity between different attributes in the batch.

This is one example of how the topmaker mixes and matches wool lots to meet specification and price. There are many others. Here Diameter, Yield, VM and PoB (M) are all held constant and 5 units of Length & Strength are substituted for each other.

(Source: Pricemaker, AWI Website)

www.wool.com.au

www.awta.com.au

Raw Wool/ TEAM 2 Parameters/Price	Add 5mm SL	Add 5N/kt
SL (mm)	93	88
SS (N/ktex)	39	44
TEAM 2 Hauteur	74.6	73.8
TEAM 2 CVH	46.8	44.0
TEAM 2 Romaine	5.2	5.2
Gsy Price/CIn price (A\$ c/kg)	646/964	650/970

The first column shows details of high length and lower strength. Column 2 is the reverse, higher strength and lower length. The best solution is the former, the Hauteur and Romaine are similar, but CVHa is lower for the high strength blend but both are well within the normal commercial range. This affects the cost of the wool. High strength is expensive (= 6c/Kg). The topmaker makes the obvious choice, as both price and goodness of fit apply.

In many cases raw wool is not purchased until an order has been placed. A topmaker/merchant locks in a price and then has to meet that price with the available wool coming onto the market. He is at the mercy of rising prices and lack of supply of specific wools to meet a specification. The exception to this is when a mill or trader takes a “position” and gambles on price or the ability to sell product to well established clients To do this he needs an understanding of the types of tops these clients regularly use. This adds risk and is only taken when the market conditions suit.

A typical blend specification format is provided below. The following is not a recipe, but provides an example of the ranges that are commonly used commercially throughout the world.

Mean Fibre Diameter:	21 Micron
Maximum range for any component lot:	+ / - 1.0 Micron
Mean Staple Length	87 mm
Maximum range for any component lot	+ / - 15 mm
Mean Staple Strength	36 N/ktex
Minimum for any component lot	26 N/ktex
Vegetable Matter Base:	1.0 %
Maximum in any component lot	3.0 %
VM type exclusion	no seed/shive
Predicted Top Length as per TEAM 2: 70mm Ha	

** All component lots to be measured for length and strength*

Additional Items for unmeasured characteristics are often applied as well.

It is important for the topmaker to understand his mill or client's combing efficiency. What is suitable for one client or mill line is not suitable for another. The table below illustrates this point.

Mill	Actual - Predicted Values		
	Hauteur (mm)	CVH (%)	Romaine (%)
Mill B	+11.1	-6.6	+0.1
Mill E	+5.7	-7.2	+5.3
World Average TEAM 2	+4-6 ± 3.4	-2.8 ± 2.8	+1.4 ± 1.5

A blend made for Mill B, would under-perform in Mill E because it is less efficient.

2 Top Specification – Raw Wool Selection

Top specification and raw wool requirement starts from the product end NOT greasy wool. This has serious implications for any grower or group wishing to turn greasy wool into top. It relies on the type of garment, fabric & fabric weight which dictates yarn requirement. Diameter and Hauteur are the important attributes set by the yarn specification, with these requirements, the topmaker can engineer the top to meet those parameters. There are no *standard top* orders but there are many similarities between some tops to the extent that combers often make standard *house types* for general sale.

If a top fails to meet minimum specifications a claim for under performance occurs. To avoid this, topmakers provide better wool than required. Having knowledge of acceptable ranges in the different raw wool attributes for each component part the topmaker can define the raw wool needed, taking account of mill efficiency and mill variation.

Using computer software such as *The Topmaker System* and prediction techniques such as the TEAM 2 formulae it is possible to determine the best option in terms of both price and wool type to meet any specification.