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**merino  
inc.**



# Rinascimento: An Industry in Reform

## Biella Masters Report 2009

Keywords: Italy, Biella, Master, Noble Fibre, Merino

### Executive Summary

This reports details observations of a four-person team that travelled to Biella, Italy in February 2009 as part of the Biella Merino Ambassador Programme. The group included representatives from merino farming, wool marketing/sales, and design/fabric manufacturing sectors, as well as a textile technologist, whose role was to assist the team in interpreting their observations.

The team was hosted by the Biella Masters Programme for two weeks and had the opportunity to observe wool scouring and top making, worsted and woollen spinning, fabric manufacture, garment make-up and retail. They also met with leading figures involved with design and business management functions within the Italian textile industry.

A team from New Zealand, who visited many of the same plants in 2007, provided a detailed overview<sup>1</sup> of the individual operation of these plants, to which a set of site visit notes has been added by the current team. Hence, the present report focuses on the business models adopted by these companies, their approaches to innovation, responses to market pressures, requirements in terms of fibre supply, and vision for the future. Specifically, it discusses:

- The economic environment in which the Italian textile industry operates
- Production, processing and marketing of NZ Merino fibre
- Drivers for design and sustainability

The Italian industry is currently facing key challenges around maintaining and growing the market for fashion and business apparel, which are made even more difficult by the current economic climate. However, being regarded as the world's leader in worsted apparel manufacture and with its considerable past investment in plant, technology, and people, it is well placed to achieve this.

During its time in Italy the team developed a view that the key to this actually lies in solving some wider issues facing the industry – for example around how to educate consumers about wool and its unique attributes. The Italian approach to this is perhaps best encapsulated by Mr Leo Rogna, designer for Ermenegildo Zegna, who proposed three marketing concepts which resonated with us and have potential to be further developed as part of the NZ Merino fibre value proposition. These were:

- **“Inside wool there is life”**- inferring that merino is a living fibre, and this affords it performance attributes that surpass those of competing fibres in many areas.
- **“Wool is like a diamond – less than 5% of fibre production in the world is wool”** – relating to exclusivity, and with exclusivity comes embodied value.

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<sup>1</sup> C Perriam and P Ensor, 2007. The Biella Merino Ambassador Programme, Report prepared for Merino Inc, 40p.

- **“Wool means New Zealand and Australia”** – reflecting an international perception that the best wool in the world comes from the South Pacific region. It is of exceptionally high quality, and is produced in an ethical, sustainable manner.

It is hoped that through the insights the team gained into the Italian worsted industry, wool processing and marketing, fashion and design, and raw material requirements can now be built upon and (through interaction with growers, and key users of NZ Merino) translated into commercial opportunities for the NZ Merino industry.

# Acknowledgements

The team wish to acknowledge the support of key funders of this programme, Merino Inc, Meat and Wool NZ, The NZ Merino Company and Biella Master Delle Fibre Nobili.

Particular acknowledgement is also made of the contribution made by staff, students (past and present) and companies supporting the Biella Masters Programme – especially those companies that hosted the team in Italy.

- Reda S.p.A.
- Pettinatura Lane di Romagnano Sesia S.p.A
- Pettinatura Italiana
- Filatura di Trivero
- Loro Piana
- Piacenza S.p.A.
- Consiglio Nazionale delle Ricerche
- Cerruti S.p.A.
- Leonardo Rogna
- Ermenegildo Zegna
- Luciano Barbera

Many individuals contributed to making this programme a success, but key ones included:

## Biella Master Delle Fibre Nobili

- Dr Mario Bona (Lecturer)
- Mr Giovanni Schiapparelli (Lecturer)
- Poala Fantone (Secretary)
- Sara Maruzzo (Student)
- Pier-Paolo Ferrucci (Student)
- Federico Serra (Student)
- Sofia Mercandino (Student)
- Giorgia Griffa (Student)

## Others

- Mr Ross Beech (Merino Inc)
- Mr John Brakenridge (NZ Merino Company)
- Mrs Jo Jermyn (Merino Inc)

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# Introduction

The Biella Master of Noble Fibres programme<sup>2</sup> is an Italian textile industry initiative set up to bring factories, artists and academics together to foster the handing down of knowledge, skills and entrepreneurial ability for the future prosperity of the Italian textile industry. The programme was established by Luciano Barbera in 1986 with the aim of attracting motivated and highly educated young people destined to lead, develop and become part of one of the most eminent sectors of the Italian economy.

The masters programme is a post graduate course lasting 16 months which provides young up-and-coming leaders the chance to study textile production; from breeding and sourcing of the fibre, to scouring and yarn spinning, all the way through to the weaving, knitting, cutting and manufacturing of finished garments. The programme has both coursework and practical components, the latter taking the students from placements in manufacturing and fibre sourcing facilities in Italy, to visits to fibre/textile production facilities in China, Australia and New Zealand, and to companies involved in the distribution of garments in America and Japan.

The programme is supported by leading Italian companies and fashion brands operating at the retail end of the industry, as well as large national and international organisations.

A recent adjunct to the masters programme has been reciprocal visits from NZ to Italy – The Biella Merino Ambassador Programme. This activity was first run in 2007 and again in 2009, and has allowed for representatives of the NZ Merino industry to travel to Biella for a two week immersion programme in the Italian textile industry. While in Italy the NZ scholars were hosted by staff and students of the Biella Masters programme (who they, in turn, would host each year when the Italian group visited NZ).

This report details the learnings of the three scholars who travelled to Italy in 2009, Mr Richard Gloag (Merino farmer, Omarama), Mr Blythe Rees-Jones (Designer, Locus Research), and Mr Nick Aubrey (Business Manager, The New Zealand Merino Company) along with Dr Simon Causer, a textile technologist from The NZ Merino Company, who accompanied the team to provide an additional source of learning.

This report focuses on business models and drivers for innovation within the Italian textile industry and is designed to complement the report produced by the two NZ scholars who travelled in 2007, Mrs Christina Perriam and Mr Paul Ensor, which focused on case studies of a range of Italian companies within the wool value chain.<sup>3</sup>

## New Zealand Merino Fibre & the Biella Textile Industry

Whilst the majority of NZ Merino fibre is currently processed in Asia, a significant quantity (particularly in the superfine range) is purchased by Italian companies and processed in Biella into high end worsted and woollen fabrics for suiting, luxury casual wear and fashion garments. In addition, quantities of (generally shorter) fibre are also processed within the other major textile manufacturing area of Italy, Prato. Thus, Italy remains an extremely important market for NZ fibre, and is arguably the most demanding in terms of fibre quality and specification.

In Italy, NZ Merino is valued for its quality, evenness, well defined crimp (providing fibre elongation), good staple length, whiteness, low levels of vegetable matter and other contaminants, handle and aesthetics.

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<sup>2</sup> <http://www.biellamaster.it/english/homedx.htm>

<sup>3</sup> C Perriam and P Ensor, 2007. The Biella Merino Ambassador Programme, Report prepared for Merino Inc, 40p.

To continue the relationship between the two industries and to support the Biella Masters Programme, The New Zealand Merino Company<sup>4</sup>, Meat & Wool New Zealand<sup>5</sup> and Merino New Zealand Incorporated<sup>6</sup> established the Biella Merino Ambassador Programme which is an initiative developed to cultivate future leaders for the New Zealand Merino industry by exposing them to the infrastructure of the Italian textile industry.

## Biella Merino Ambassador Programme Goals

The goal of the programme is to provide a mechanism to up-skill young Merino industry representatives, increasing their understanding of the merino supply chain and, in particular, of the Italian worsted and woollen textile industries. By encouraging the exchange of information between the two nations, it is believed that new knowledge and commercial relationships can be developed that will help influence and progress the NZ merino industry in the future.

The key aims of the programme include:

- Advancing an understanding of the New Zealand Merino and Italian textile production and processing supply chain.
- Understanding the requirements and processing specifications of superfine fibres in Biella.
- Fostering the relationship between the two nations and the Biella Master of Noble Fibres Programme.

The following report provides a summary of the 2009 Biella Merino Ambassadors trip to Italy. Key insights and relevant information believed beneficial to the New Zealand Merino industry is published to inform the industry of the current developments within Italy. This information has been categorised into three main sections, prepared by each of the three ambassadors: Design & Sustainability; Economic Environment in which the Italian Textile Industry Operates; Production, Processing and NZ Merino Positioning.

The goal of the following report is to:

- Provide feedback to growers about the Italian textile industry and form the basis for discussion around likely options to add value to the NZ merino industry.
- Assess the current economic issues facing the industry, including emerging drivers such as sustainable production, ethical manufacture etc.
- Identify new insights and opportunities for the NZ merino industry and provide recommendations that will help guide merino production, new product development, processes, marketing and services.

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<sup>4</sup> <http://www.nzmerino.co.nz/>

<sup>5</sup> <http://www.meatnz.co.nz/>

<sup>6</sup> <http://www.merinoinc.co.nz/>

## Glossary

NZM	The New Zealand Merino Company
IWTO	International Wool Textile Organisation
Top	Top (wool) is a continuous, untwisted, ribbon of fibre produced from a combing machine, after the fleece has been scoured and carded to produce a sliver.
AM	Australian Merino
VM	Vegetable Matter – as a contaminant of wool or finished product
PETA	People for the Ethical Treatment of Animals <sup>7</sup>
Noble Fibres	Distinguished natural fibres derived from animals or plants
LCA	Life Cycle Assessment. LCA refers to the development and analysis of product systems (which includes both products and services) by looking at the inputs and outputs of materials over its life.
LCT	Life Cycle Thinking
SRS	Soft Rolling Skin (used in relation to a specific style of wool produced by sheep exhibiting this trait)

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<sup>7</sup> <http://www.peta.org/>

## Background to Biella and the Italian Textile Industry

Biella, in Northern Italy, has always been considered a region with a long standing tradition of producing high quality textile products. Many of the world's largest fashion brands are either based in Italy or have their origins there.

Biella is situated at the foot of the Italian Alps near the Italy/Switzerland border, 130km North West of Milan. The city has a population of 46,000 and the Biellese area is home to many textile mills focused on the production of high quality worsted and woollen fabrics. A second major area of textile production exists which is situated near Prato, just North of Florence, but this is more strongly focussed on woollen (as opposed to worsted) processing.

Historically, the concentration of textile mills around Biella was a result of the region's fresh water supply which is an important ingredient for producing high quality fabrics with excellent handle and also provided a source of energy to run the old looms during the industrial revolution. More recently, Biella has transformed into a hot bed of high technology worsted fabric manufacture, with state-of-the-art automated processing paving the way for an increase in quality and product performance.

Table 1 provides an overview of the 2009 Biella Ambassador Programme by listing the various mills that were visited, while Figure 1 below provides a geographical map of the location and proximity of the mills in the broader Biellese region.

**Figure 1** Geographical map of textile mills in the Biellese region



**Table 1** 2009 Biella Ambassador Programme (February 2009)

Day/Date	Location	Label (Fig 1)	Weblink
Monday 16th	Introductory session at offices of the Biella Masterate programme	A	<a href="http://www.biellamaster.it">www.biellamaster.it</a>
	Visit combing mill 'Pettinatura Italiana' in Vigliano Biellese	1	<a href="http://www.piv.it">www.piv.it</a>
	Visit worsted spinning mill 'Filatura di Trivero' in Gaglianico	2	<a href="http://www.filaturaditrivero.it">www.filaturaditrivero.it</a>
Tuesday 17th	Visit woollen spinning mill 'Loro Piana' in Roccapietra	3	<a href="http://www.loropiana.com">www.loropiana.com</a>
	Fashion and marketing session with Mr. Leo Rogna of 'Ermenegildo Zegna'		<a href="http://www.zegna.com">www.zegna.com</a>
Wednesday 18th	Visit woollen mill 'Lanificio Cerruti' in Biella	4	<a href="http://www.lanificiocerruti.com">www.lanificiocerruti.com</a>
	Study of textile finishing processes conducted at Città Studi by Prof. Mario Bona	A	
Thursday 19th	Finishing teaching by Prof. Mario Bona		
Friday 20th	Finishing teaching by Prof. Mario Bona		
	Visit to suit manufacturing mill 'Inco' (Ermenegildo Zegna Group) in Novara.	5	
Monday 23rd	In-depth study of finishing at Lanificio Successori Reda and meeting with company managers	6	<a href="http://www.reda.it">www.reda.it</a>
Tuesday 24th	Concluding visit and meeting at Lanificio Successori Reda		
Wednesday 25th	Visit woollen mill 'Lanificio Piacenza'	7	<a href="http://www.piacenza1733.it">www.piacenza1733.it</a>
	Visit CNR textile research laboratories	8	<a href="http://www.bi.ismac.cnr.it">www.bi.ismac.cnr.it</a>
Thursday 26th	In-depth study of Loro Piana plants and retail store. Meet company managers in Quarona	9	<a href="http://www.loropiana.com">www.loropiana.com</a>
Friday 27th	Visit woollen mill 'Ermenegildo Zegna' in Trivero	10	<a href="http://www.zegna.com">www.zegna.com</a>
Friday 27th	Meeting with Luciano Barbera at Carlo Barbera & C. S.p.A.	11	<a href="http://www.lucianobarbera.it">www.lucianobarbera.it</a>

**Figure 2** NZ Ambassadors with Mr Luciano Barbera (Founder of the Biella Masters Programme)



# Design & Sustainability

## Introduction

Italy is a country synonymous with leading international art, design, and creative pursuits across a wide range of industry sectors. One only needs to look back to the Renaissance<sup>8</sup> and to the creative thinking by masters such as Leonardo da Vinci, Michelangelo and Raphael to see how artistic endeavours helped contribute towards the intellectual transformation that shaped the Industrial Revolution<sup>9</sup> (which gave birth to textile manufacturing) and the modern era.

Today many Italian brands have become beacons in a range of markets for adopting a design leadership position. Think automotive, and Ferrari, Alfa Romeo, Fiat and perhaps Piaggio or Vespa come to mind almost immediately. Think furniture and homeware, and you may identify Alessi, Cappellini, Kartel or Natuzzi; or think fashion and apparel, and brands like Armani, Prada, Gucci, Luciano Barbera, Loro Piana, Ermenegildo Zegna, Cerruti, and Piacenza will be high on your list of most recognised.

All of these companies have been able to establish a clear point of difference through the application of 'design thinking' in what has become a crowded international marketplace, so it's not surprising that Italy is a focal point for many industries, including fashion.

**Figure 2** Italian Brands Leading with Design



<sup>8</sup> The **Renaissance** (from French Renaissance, meaning "rebirth"; Italian: **Rinascimento**, from re- "again" and nascere "be born") was a cultural movement that spanned roughly the 14th to the 17th century, beginning in Italy in the Late Middle Ages and later spreading to the rest of Europe. As a cultural movement, it encompassed a rebellion of learning based on classical sources, the development of linear perspective in painting, and gradual but widespread educational reform.

<sup>9</sup> The **Industrial Revolution** was a period in the late 18th and early 19th centuries when major changes in agriculture, manufacturing, mining, and transportation had a profound effect on the socioeconomic and cultural conditions throughout the world. The Industrial Revolution saw the transition in previously manual labour and draft animal-based economy towards machine-based manufacturing. It started with the mechanization of the textile industries, the development of iron-making techniques and the increased use of refined coal.

Design thinking is well described by Tim Brown (CEO and President of IDEO<sup>10</sup>) as a methodology that imbues the full spectrum of innovation activities with human-centred design ethos.

*"A methodology where innovation is powered by a thorough understanding, through direct observation, of what people want and need in their lives, and what they like and dislike about the way particular products are made, packaged, marketed, sold, and supported. Put simply, design thinking is a discipline that uses the designer's sensibility and methods to match people's needs with what is technologically feasible and what a viable business strategy can convert into customer value and market opportunity."<sup>11</sup>*

This section will talk about the creative pursuits embedded within the Biellese textile and luxury fibre products industry that were directly observed during our visit. It looks at the role of design thinking within the industry and how it is, and can be, used to create customer value. It also discusses the importance this approach has for the NZ merino grower and how it can be used as a tool to create differentiation and competitive advantage.

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<sup>10</sup> [www.ideo.com](http://www.ideo.com)

<sup>11</sup> Harvard Business Review June 2008 [www.hrb.org](http://www.hrb.org)

## The Context for Design Thinking in Biella

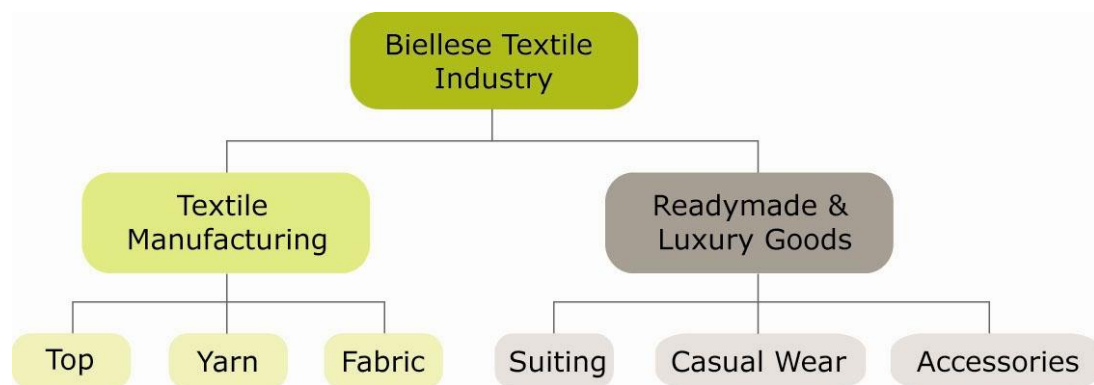
To clearly understand the role that design thinking plays within the high-end suiting and luxury fibre industry in Biella, it is important to firstly understand the context.

The 'context' encompasses all external factors that influence a product and customer value, for example: how the industry is structured, what is driving the market and those changes that are occurring within it, and the needs and behavioural trends of the end consumer. Understanding the context helps to provide some insights into how a product can best be developed and who it is best suited to.

### Biella's Textile Industry

The luxury fibre industry in Biella can be broadly categorised into two main divisions: Textile Manufacturing and Readymade Luxury Goods. Textile Manufacturing incorporates top, yarn, and fabric production while Readymade Luxury Goods refers to the manufacture of suiting, casual wear, and accessories. Figure 3 below outlines the current industry structure and key characteristics.

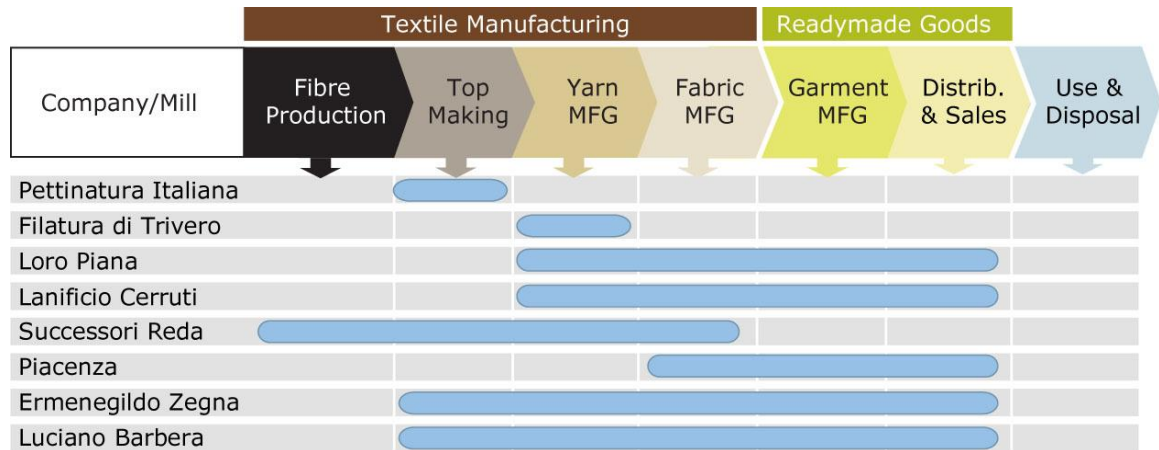
**Figure 3** Biella's Textile Industry



With little or no fine raw fibre produced in Italy the majority of companies visited operate between top making and retail (see Table 2 below for a broad view of the core activities undertaken by each company). The industry is structured heavily around delivery of the highest quality products. To deliver this level of quality companies are:

- Producing their own top in Biella or purchasing from local top makers to retain quality control through closer relations with supply chain partners.
- Focusing skilled labour on areas of production that enhance quality and craftsmanship, while replacing more tedious tasks with automated equipment.

**Table 2** Company Activity Profile



## Research & Development

Research and development in Biella operates on three primary levels:

- Product development within the production environment
- Speculative research
- Manufacturing and production processing

Many of the mills visited have a small pilot plant or fabric prototyping facility onsite, alongside a testing department where research and development can be undertaken within the production environment. Research and early yarn or fabric trials can be undertaken on a small scale to reduce issues with bulk production.

The Italian National Research Council (CNR) undertakes more speculative research and development in both a commercial and pure research capacity. In Biella CNR has three divisions: Biopolymers, Natural Fibres, and Synthetic Polymers. CNR is funded by the state where half of the budget comes from central government in Rome with commercially funded projects offsetting the remaining operational costs. CNR has a pilot plant on site for small scale production based research. Major projects undertaken at CNR include research with smart textiles, cashmere identification technologies, shrink resistance treatments (plasma), protein reconstitution, and pesticide detection and analysis.

## Industry Drivers & Consumer Trends

There are a range of internal and external developments driving the evolution of the suiting and luxury fibre industry from within Italy. A group of key aspects are discussed below to provide New Zealand merino growers and designers a clear picture of what is having an influence on the market and the consumer.

### Timeless Style

Much of the focus within the market from leading readymade garment manufacturers and designers is on producing products with an enduring timeless style. Timeless refers to a style that goes beyond any fashion and stylistic movement, where the design is not linked to current style trends. Timeless fashion targets the sophisticated consumer where design performance and simplicity rule over style and fashion.

### Fibre Uniqueness as a Point of Difference

Much of the market in high-end luxury suiting is focused on utilization of unique, often rare, superfine luxury fibres to provide distinction and a point of difference. Fibres such as vicuña<sup>12</sup>, cashmere, and merino are commonly sourced by Italian mills from remote parts of the world for their fibre properties and because these fibres come with a degree of 'embedded value' which is acknowledged by the sophisticated consumer. In this model, fibre exclusivity is translated into value and marketed as part of the product material story and as a point of difference.

### Superfine Authentication

With increased focus on micron the industry has moved to authenticate products that are made of highly valuable superfine wool from those that are not to maintain this point of difference in the market. The International Wool Textile Organisation<sup>13</sup> (IWTO) and the US Wool Products Labelling Act has codified fabric quality definitions relating to the use of 'Super X' and 'X' descriptions in the marketing of wool products<sup>14</sup>.

Labelling for fineness of fibre is voluntary but if specified, must be honest and accurate. The IWTO intends to enforce garment makers and retailers to accurately label products and will inform, through sample testing, those that do not comply and legal action will be taken. The industry is divided on this point and it has become a topic of intense debate. Much of the resistance to adopt the Super X descriptor is because it refers to only one parameter: fibre fineness, rather than performance of the finished fabric (which is dictated by a plethora of other factors also).

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<sup>12</sup> The **vicuña** is one of two wild South American camelids, along with the guanaco, which live in the high alpine areas of the Andes. It is a relative of the llama, and is now believed to be the wild ancestor of domesticated alpacas, which are raised for their fibre. Vicuñas produce small amounts of extremely fine wool, which is very expensive due to a lack of supply - the animal can only be shorn every 3 years. It is understood that the Inca raised vicuñas for their wool, and that it was against the law for any but royalty to wear vicuña garments. Before being declared endangered in 1974, only about 6,000 animals were left. Today, the vicuña population has recovered to about 125,000, and while conservation organizations have reduced its level of threat, they still call for active conservation programs to protect population levels from poaching, habitat loss, and other threats.

<sup>13</sup> <http://www.iwto.org/>

<sup>14</sup> The term 'super' means that a fibre is pure wool, and the following number specifies wool fineness

**Table 3** IWTO Fineness Class/Maximum Diameters in Microns<sup>15</sup>

'X' Value	Maximum Mean Fibre Diameter	'X' Value	Maximum Mean Fibre Diameter
80's	19.75µm	170's	15.25µm
90's	19.25µm	180's	14.75µm
100's	18.75µm	190's	14.25µm
110's	18.25µm	200's	13.75µm
120's	17.75µm	210's	13.25µm
130's	17.25µm	220's	12.75µm
140's	16.75µm	230's	12.25µm
150's	16.25µm	240's	11.75µm
160's	15.75µm	250's	11.25µm

### Cashmere Stronghold

Cashmere is another natural fibre commonly processed in Biella. It is the next most common after wool in terms of volume and is often blended with merino to assist with processing. 100% cashmere yarns/fabrics are also common though. Where it is processed cashmere is seldom shrink resist treated, relying on a combination of its lower scale height and 'dry-clean only' care labelling to overcome this issue.

### Demand for Quality Performance

More than ever, consumers are looking for lightweight performance products produced to the highest standard. Performance of a product can be defined by a range of qualitative and quantitative metrics but simply put, performance of suiting and casual wear refers to products that have an exceptional hand, are durable and can be worn easily, and in some cases have a technical component such as the Storm System<sup>(R)16</sup> by Loro Piana which confers water resistance.

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<sup>15</sup> CCMI – Introducing The Superfine Wool Council (Second Edition, Feb 2008)

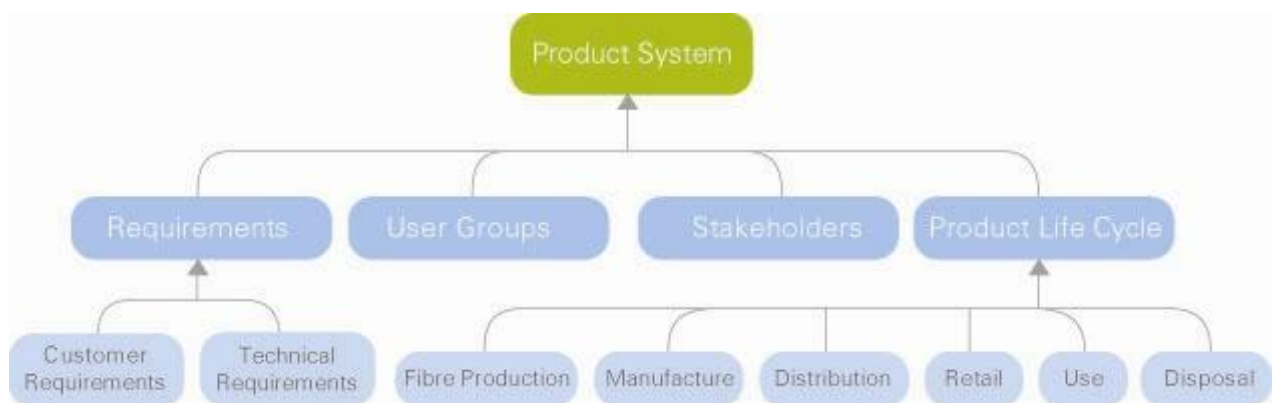
<sup>16</sup> Courtesy: Loro Piana

## Creating Value within the Supply Chain

Italian textile production is an interesting combination of traditional methods mixed with an advanced understanding of technical production processing. With a long history of textile manufacturing in the region, the mills in Biella are masters in the art of sourcing, blending, combing, spinning, weaving and finishing fabrics of the highest quality.

The best place to begin looking at how Biellese companies are using creativity and the technical capability of the region is to look at the product system, paying particular attention to the key stages within the product lifecycle. A product, process or service is generically defined by the users and stakeholders, the product lifecycle, and the technical and customer requirements. These elements form the 'product system' (Figure 4 illustrates the context that a product operates in).

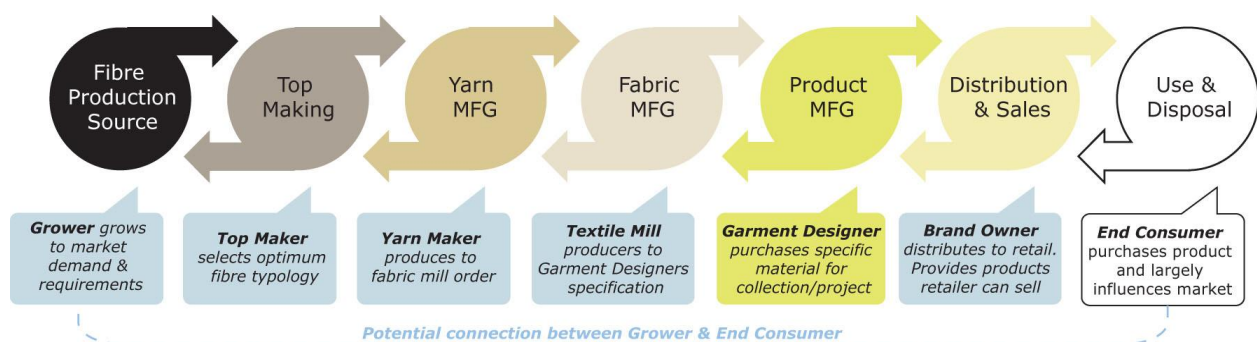
**Figure 4** Product System<sup>17</sup>



The product lifecycle refers to the key stages from fibre production through to end use and disposal. Figure 5 below provides an outline of the lifecycle for a New Zealand Merino product produced in Biella. At each stage the key voice of the customer has been noted to provide an insight to the push and pull influence that occurs from users and stakeholders within the different cycles.

Within each step in Biella much of the focus has been to eliminate tedious jobs with technology so people can focus on quality. These key areas include Top Making, Fabric Production, Garment Design & Manufacture, and Retail.

**Figure 5** Product lifecycle for New Zealand Merino produced in Biella



<sup>17</sup> Courtesy of Locus Research Ltd

## Top Making - Crafting the Premium Vintage

Many of the mills visited had a precise wool blending program that governs what is sourced (style, quality and quantity) and how it is to be blended and processed. Blending is a heavily creative and intuitive process backed up with technical data. A lot of emphasis is placed on accurate wool classification when formulating blends of the desired specification.

Blending happens at every processing stage, from scouring through to yarn form, and is done to get the yarn as even as possible. The wool blends for most mills are mostly 70% Australian and 30% New Zealand wool. New Zealand wool is blended to reduce the proportion of imperfections in other wools and the mills cannot source all the wool they need from New Zealand. At each mill, blending and processing is based on experience and intuition generally passed down from generation to generation.

Top makers in Biella blend lots from a large palette of greasy wool styles (or typologies as they're commonly referred to) from New Zealand, Australia, South Africa and South America. Some mills purchase in the vicinity of 250 different styles of greasy wool, which is carefully crafted into as few as six types of top, with some blends consisting of 50-60 wool styles. This knowledge and creative blending process is one of the key contributors to the success of the industry and has a large influence on the value and quality of the end products.

By way of example, one fabric manufacturer, Successori Reda (Reda), purchased three merino-producing properties in NZ (Otamatapaio, Rugged Ridges and Glenrock) as a means of helping them better understand the issues involved with growing merino fibre. Whilst the volume of wool grown on these properties is a fraction of their overall consumption the insights and control gained over the type of wool they desire for weaving has been invaluable.

The mills check every lot of wool before blending to make sure it is what they require. The six top types Reda produces are always made from the same percentage and number of types. This comes from years of research and development. The average lot size for blending is around 500 bales.

Typically greasy wool is processed into the finished fabric in 9 to 12 months, with some fabrics taking several years to go from raw product to finished fabric. The mills try and use most of the wool they buy in the same season, but wool can spend a lot of time in the form of tops or yarn so buying quality wool is the only way they can cover against price fluctuations.

## Fabric Production – Producing Collections

The fashion and luxury fibre fabrics market operates around two seasons Spring/Summer (1) and Autumn/Winter (2) due to the major change in climatic and fashion related conditions. A typical mill might conduct production twelve months in advance, producing two primary fabric collections for each season with an extensive range of options within each collection for both men's and women's products, although mills do tend to focus on either men's or women's products.<sup>18</sup>

In some case Biellese mills are producing in the vicinity of ninety articles (types of fabric) per collection with eight designs (fabric styles) per article and up to 35 colours per design. Table 4 below gives an example of a typical fabric collection produced in Biella for either gender.

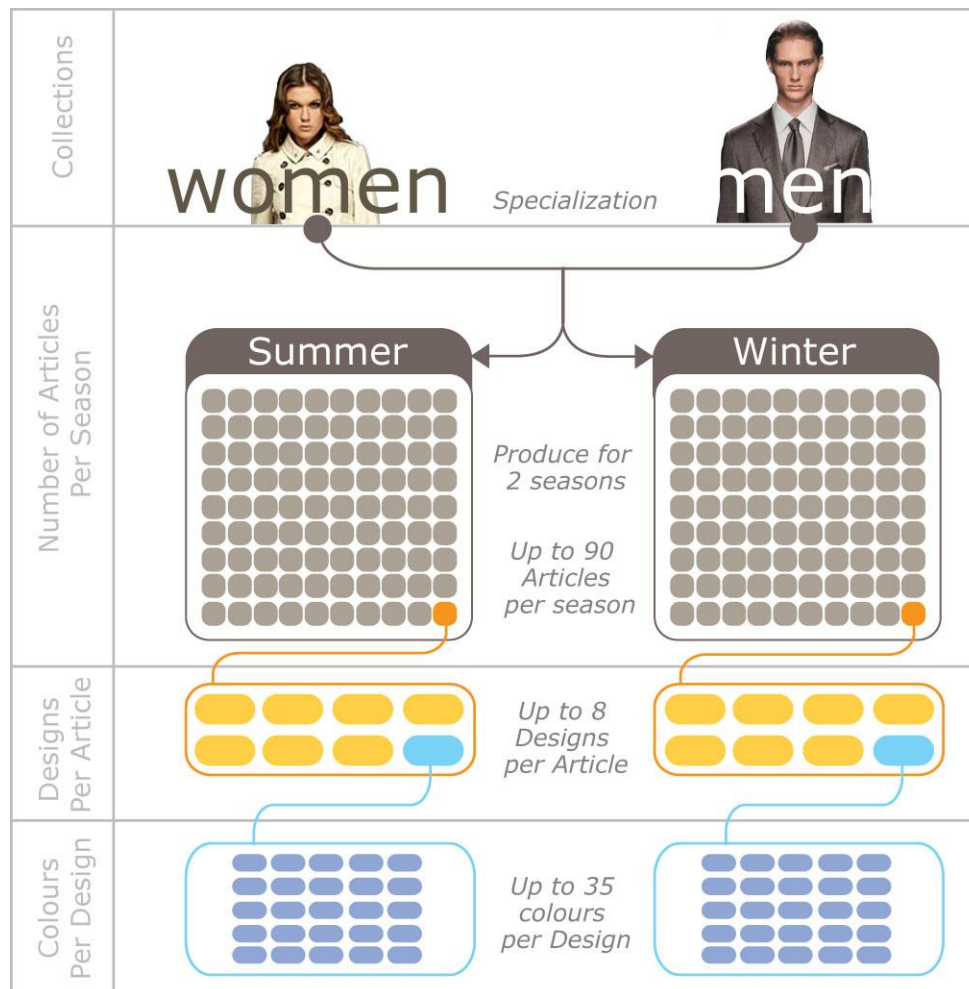
Every season for the launch of a new collection each article is either reworked or

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<sup>18</sup> Visit at Woollen Mill 'Lanificio Cerruti' in Biella - Wednesday 18th

renewed. Very few fabrics are carried over to a new year or season.

**Table 4** Collection Structure Example



### Garment Design & Manufacture - Producing the Ultra Conservative

Garment design was an area singled out for lagging behind on creativity when compared to the level of artistry applied to other areas within the product lifecycle. This was surprising because the design of the final article has in many other fabric applications delivered both a functional and stylistic point of difference.

The current approach to designing a garment starts with an idea, and we were told that today most of the ideas are coming from something that has gone before or been borrowed from the past. Consistent renewal of borrowed ideas or past styles has in effect created a garment design process that lacks excitement and creativity, leading to what one prominent Italian designer described as an ultraconservative market place. It was mentioned that the current generation is 'only really buying black' and this is not very inspiring<sup>19</sup>.

Suit manufacturing is very traditional in Biella with a strong emphasis placed on handmade quality and the personal touch. Many of the suits consist of between 30-40 components which can require upwards of 125-130 steps (operations) to complete.

When we visited Inco, the suit manufacturing division of Ermenegildo Zegna, we saw

<sup>19</sup> Meeting with Mr. Leo Rogna of 'Ermenegildo Zegna' - Tuesday 17<sup>th</sup>

firsthand how suits are produced within the traditional assembly line system. This approach allows for a high level of quality control where faults are detected early allowing for those items to be reworked. This also creates very little waste or reject product.

Many companies are producing fabrics or finished readymade garments for other companies operating within the same high end luxury market. This builds capability and shares knowledge while illustrating a collective industry approach.

## Retail – Shift towards Customer Facing Brands

During our visit we noticed the large increase in value being achieved at the consumer end of the product system. While this is well known and common with all products and services, what is interesting is the level of value being created through consumer facing brands. The average woollen fabric in Biella sells for between €10-20 per meter yet the final garment can retail for between €400 - 800 (which typically consisting of between 2-4 meters of fabric depending on roll width). This increase in value is significant and is achieved through ownership of the prestigious brand. One cannot make readymade garments within the luxury market without a prominent brand. To develop this brand you need a unique story and a product with a strong point of difference; an approach that requires a change in mind set from simply producing fabrics.

Over the last decade many of Biella's companies have moved towards a more customer facing position, producing self branded readymade garments sold through their own retail channels. Ermenegildo Zegna, Loro Piana, Lanificio Cerruti, and Luciano Barbera have moved towards a higher positioning on price, value and quality with finished, branded garments. These companies have experienced significant growth since launching proprietary brands. To avoid conflicting business interest with fabric purchasing clients and suit wear suppliers some mills have focused specifically on producing only casual wear themselves and continue to manufacture suiting fabrics for other brands.

One company we learned of generated 45% of the company's turnover within an eight year period by going direct to retail with their own branded products and by building a strong retail presence. Interestingly, the end consumer sets the price for wool, so it appears those close to market will always stand to benefit.

## Sustainability and Environmental Impact

The key environmental challenges for the Biellese textiles sector are well recognised and include reducing energy, water and chemical usage, and minimising the release of chemicals in waste water. Environmental development is being driven at two levels: consumer awareness (known as a pull effect) and responsible manufacturing and legislation (alternatively known as a push effect).

### Consumer Awareness

At the retail end it appears that the luxury fibre products market lags behind other market sectors within the clothing trade, such as the active outdoors market, on promotion of environmental sustainability. Consumer awareness of environmental issues has mainly revolved around animal welfare and organics. This is something being driven in the market with organisations such as PETA (People for the Ethical Treatment of Animals)<sup>20</sup> that have brought accountability to manufacturers producing products derived from animals.

With organics there are two main topics: pesticide-free production and natural processing which includes natural dyes. Like non-mulesing, much of the discussion around pesticide-free wool draws back to the welfare of the animal, the quality of the end product, and the increase in cost (which can rise by up to eight times when natural dyes are introduced). Unfortunately, those mills in Biella that have worked with natural dyes believe they have less consistent colouration.

### Responsible Manufacturing & Legislation

Textile manufacturing with wool and other noble fibres uses a considerable volume of water. As water is such an important element in this process, much of the environmental development within the Biellese processing chain is focused on effective water use and effluent treatment. Other emerging areas include the reduction of heavy metal use, environmental protection, sustainable fibre production, and the qualification of carbon emissions.

### Water Use & Effluent Treatment

The mills in Biella draw water for production from local waterways. EU regulations and other eco-management schemes<sup>21</sup> govern its use and the discharge of waste water and other aqueous processing outputs. Onsite water treatment plants manage effluents and reprocess water to a suitable quality for discharging back into the local waterway. Figure 6 below provides an overview of the typical water assessment carried out to determine water quality before it can be released back into local waterways.

**Figure 6** Measures of wastewater quality typically tested for in mill effluents.

Water Analysis Determination	pH	Phosphorus total (P)
	Sedimentary materials	Ammonium nitrogen (NH <sub>4</sub> -N)
	Suspension materials	Nitrate (NO <sub>2</sub> -N)
	Chemical Oxygen Demand (COD)	Anionic surfactants
	Chrome (Cr)	Non ionic surfactants
	Iron (Fe)	Chlorides (Cl <sup>-</sup> )
	Active Chrome (Cr)	Sulphates (SO <sub>4</sub> <sup>2-</sup> )
	Sulphides (S <sup>2-</sup> )	

<sup>20</sup> <http://www.peta.org/about/index.asp>

<sup>21</sup> Successori Reda is the only vertically integrated textile mill that is currently certified by the EU Eco-Management and Audit Scheme. EMAS is a management tool for companies and other organisations to evaluate, report and improve their environmental performance.

Pesticide residue is a big issue and companies are looking at the options for minimising its impact during the processing chain and treatment of the waste residue.

Mills may consume in the vicinity of 1000m<sup>3</sup> of water per day. In some cases this water is discharged back into local waterways after treatment, in some cases it was disposed of to a separate waste water treatment facility and in some cases significant amounts (in the vicinity of 70% of total consumption) were being put back through the processing cycle. Depending on individual circumstances however, drawing a certain amount of fresh water had economic benefits for some plants.

## Contaminants

NZ wools were rated highly for their relative freedom from contaminants. Polypropylene (PP) contamination was formerly a big issue for the Italian industry when all wool packs were made from PP. When stray PP fibres (introduced, for example, during bale coring) end up in the wool they create noticeable fabric faults because PP does not take up dyestuff in the same way that wool does. This is the reason nylon packs are now used exclusively for Merino fibre (nylon having the ability to accept the same dyestuffs as wool). In a similar fashion, other contaminants have the potential to reduce the value of fabric produced and/or damage machinery. Illustrating the importance of this, one processor stated that half a meter of baling twine or packaging fibres contaminating wool has the potential to cause up to €500 of damage in the processing chain.

## Chrome Dyeing

Some mills continue to utilise chrome dyeing as one of the only means available to them to obtain sufficiently high lightfastness, and deep shades. The key issue with chrome dyeing is chromium residues in dyebath effluents – and their ensuing impact on the environment and/or operation of biological treatment plants. Many steps have been taken to reduce the impact of dyeing processes, particularly in response to legal restrictions on pollution, most notably contaminated effluent, and on the use of toxic chemicals. Chrome dyeing is restricted in New Zealand and other countries - primarily through regulation of chromium levels in effluent.

## Environmental Protection

Some mills including Ermenegildo Zegna (Zegna) have initiated their own environmental protection programs to not only develop and reforest areas to offset production but also to protect areas for future generations. Zegna have protected the large region surrounding the mill in Trivero and planted it in around 500,000 pine trees.

## Carbon Emissions of Natural Fibres

Carbon emissions of natural fibre production and processing are an emerging topic in Biella, potentially coming off the back of consumer and governmental awareness in other industries. We were asked about the carbon emissions produced during the production of New Zealand Merino. Carbon emissions are calculated using Carbon Accounting and Life Cycle Assessment (LCA) methodologies<sup>22</sup>. The carbon emissions conversation is being directed towards the comparison between fibre types. Mills believe the carbon emissions of Cashmere and Merino would be comparative post the wool top stage simply because the two fibres undergo relatively similar processes

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<sup>22</sup> Please refer to the report entitled: Life Cycle Assessment: New Zealand Merino Industry, prepared by Andrew Barber and Glenys Pellow of the AgriBusiness Group for a detailed introduction to LCA and NZ Merino total energy use and carbon dioxide emissions.

within the same environment and with similar inputs. Mills are therefore interested in comparing carbon emissions of the two fibres during fibre production and early stage processing to determine which fibre has lower emissions.

The important point here is for the NZ Merino industry to encourage and educate the luxury textiles and fibre products industry about the importance of viewing environmental sustainability holistically, rather than in single frame. Carbon emissions contribute towards global warming potential, of which this is only one aspect that can be qualified during an LCA study.

LCA may be a tool that can assist the industry in the future by identifying what the problematic areas are within the supply chain and qualifying the environmental impact of various inputs and outputs. Conducting a comparative LCA study on the major fibres used in Biella may be a logical starting point but one would suspect gaining sufficient data for the production of Cashmere and Vicuña may be difficult.

## Design Thinking with New Zealand Merino: Insights & Opportunities

During the trip to Biella a range of insights and opportunities were identified which could be developed to improve our systems, encourage new forms of consumer, grower, designer, producer interaction, and to create new forms of value within the supply chain.

The following section puts forward a series of design concepts believed applicable for the New Zealand Merino context.

### Marketing Our Story - Teaching Consumers about New Zealand Merino

The most challenging discussion in Biella was around how to teach consumers about merino wool. Three key points Mr Leo Rogna (designer for Ermenegildo Zegna) mentioned resonated with the NZ ambassadors. These were:

- Inside wool there is life.
- Wool is like a diamond, only 5% of fibre production in the world is wool.
- Wool means New Zealand and Australia.

These direct messages from Biella provide an interesting viewpoint for how we perceive our New Zealand Merino fibre. Integrating these points into the attributes, benefits and values of the New Zealand Merino brand, marketing proposition, and product offer could be influential in capturing a larger share in the luxury fibres market.

### Growing Merino is a family Business – A connection with Biella

The textiles industry in Biella is very traditional and family orientated much like our farming lifestyle in New Zealand and our cultural heritage of growing fine fibres. This connection may add value in developing the relationship between the two industries because there is a common language and understanding towards traditional cultural values and noble fibre production.

Our trip confirmed that the market is receptive of an honest, unique, and exportable story such as that told about the New Zealand Merino industry in the international context; the story of family farming, of genetics, and of animal welfare and development.

The New Zealand Merino industry has access to a rich archive of imagery and documentation, which provides a robust story that is difficult to replicate elsewhere simply because of our location, our farming fathers record keeping, and the length of time that we have been farming in NZ. This further supports the New Zealand Merino brand story and marketing proposition employed by The New Zealand Merino Company, going beyond our natural and geographical assets towards communicating the intricacies of growing New Zealand Merino fibre.

### Metaform – A Collaborative Platform for New Ideas

The general perception in Biella was that there is significant potential in developing new ideas and market opportunities with merino. As stated by Mr. Leo Rogna, "wool can remain as wool but we need to create more exciting products with it. Wool needs to be opened up to new applications and opportunities."

To do this we must involve our creative industries and move beyond focusing solely on production and the product itself, to driving research and development of new product service systems and greater integration. One approach to seeding diversity

and new ideas would be to establish an initiative in partnership with the Italian mills (and potentially other mills) that would enable the invitation of young farmers, researchers, designers, and scientists to experiment with the fibre and to investigate what is possible.

Metaform is an example of this type of approach where the disciplines of design, science and business have combined to create new forms of value with different raw materials from New Zealand. In 2003 the Metaform<sup>23</sup> initiative was developed to allow students, professional designers and craftspeople to generate ideas and opportunities for a new wood technology called GreenSeal<sup>24</sup> developed by Scion (formally Forest Research Institute of NZ) and Carter Holt Harvey. Metaform provided a platform for new ideas and applications for the material. What resulted were more than one hundred innovative new ideas for the commercial use of the material, along with a travelling exhibition which was exhibited at the Auckland Museum and The Dowse Gallery in Wellington. Several pieces were then exhibited internationally at 100% Design in London, and at London's Design Week. It also provided a launching pad for a group of young businesses that are now commercially producing products with the material.

The Metaform approach could be collaboratively developed to provide a launching pad for new and creative ideas for New Zealand Merino fibre. An initiative such as this would have immediate international interest if Biella and NZ were to collaborate on it together, offering significant international profiling of the fibre as well as developing new commercial product and business opportunities.

## Designers Resource

An immediate requirement within the international design community is for an easily accessible central resource for finding out about NZ merino, providing elementary and detailed information for those wishing to utilise the fibre in new applications.

The Merino Innovation website <http://www.merinoinnovation.com/awi/en/> is a relatively good example of a centralised resource; however this is not promoting New Zealand fibre. Creating an easily accessible and publically available resource would help equip material specifiers, designers, and other creative groups with the tools and knowledge for developing more products and services with the material, streamlining what can be at times a difficult research process. Integrating a sourcing guide would help link this audience with reputable mills, garment makers, textile scientists and brands using New Zealand Merino fibre.

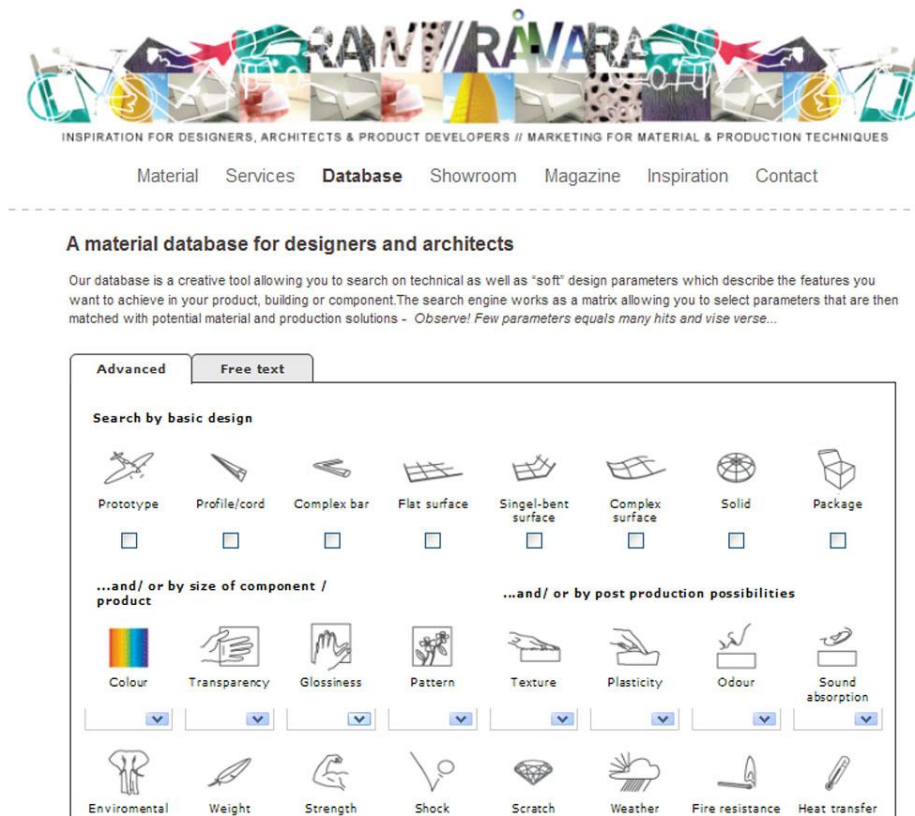
Instead of completely replicating what AWI have done, this resource could function more like a merino database for designers and product developers similar to <http://www.ravara.se/Raw/Database.html>. This may create a public community where new ideas, latest news, queries and relevant development information can be submitted providing valuable feedback to the New Zealand Merino industry.

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<sup>23</sup> <http://www.metaform.co.nz/>

<sup>24</sup> Green Seal is a sustainable hardened timber technology where naturally based cellulose is impregnated into sustainably grown radiata pine to give the timber the physical properties and appearance of a hardwood.

**Figure 7** Ravara Website - Materials Database for Designers



## Changing the Creative Mindset: Shifting from 'Single Frame' to 'Integrating Life Cycle Thinking'

The current approach towards sustainability within the textiles sector is still one of 'single frame' rather than the 'whole product life cycle'. Much of this single-framed approach stems from the largely unchanged production process and the introduction of environmental legislation. Legislation has had a formative influence on sustainability innovation in the fashion and textile sector, forcing change because non-compliance is expensive and increases business risk. This promotes a reactive and compliance driven agenda for innovation, rather than a proactive agenda.

Sustainability is very complex. Put simply, the environmental impact of a product is largely influenced by how well a product is designed. How it will be produced, what materials it will be made from, and how it will be used and disposed of in the real world, are all aspects highly influenced by a products design.

Life Cycle Thinking (LCT)<sup>25</sup> provides a creative approach for integrating sustainability into the design process, where design of a new product shifts from the object itself (a traditional approach which is focused on performance, aesthetics, and ergonomics), to the service system of the product (an integrated approach focused on use, services, and systems).

The best way to describe the difference between the traditional and integrated approach is to use the example of a *Core Function*<sup>26</sup> for the design of a milk bottle. While this has little to do with textiles it does clearly articulate a different way of thinking.

<sup>25</sup> <http://www.thinkingdesign.co.nz/>

<sup>26</sup> <http://www.thinkingdesign.co.nz/>

The traditional approach is to design the object itself (considering how easy it is to carry, pour, store and select the appropriate material (i.e. plastic, paper, or glass)). The integrated approach looks at the function the product provides, which in the case of a milk bottle might be the 'convenient delivery of fresh milk' (which would consider the best ways to conveniently deliver fresh milk to the consumer, such as washing of the object and refilling or single use and material recycling).

LCT approach presents a vehicle for the industry to move beyond the current design process which as we learnt generally starts with something 'borrowed', to a process that creatively looks to influence the service and function which the product provides to the end consumer. Adopting LCT may provide a creative new way to integrate sustainability within the design programme while providing a strong lever to inspire new thinking and guide design innovation.

# The Economic Environment in which the Italian Textile Industry Operates

## Introduction

There can be no doubt that the current recession is the dominant economic factor impacting upon the textile industry at the present time; for that reason it will be discussed in depth. This aside, a number of aspects were noted that will likely stand the industry in good stead when markets improve or, at the very least, regain a level of stability. In addition, the current market turmoil is expected to stimulate companies to consider business strategies that may have not previously been contemplated. This is likely to offer opportunities for New Zealand's merino offering to cement its place as an exclusive luxury fibre.

This section will detail the following issues in relation to the Italian textile industry:

- The impact of the global economic downturn from a manufacturer and a grower perspective.
- The increasing tolerance and indeed receptiveness towards diversification both in terms of staff and product.
- The shift of unionist attention away from political activity towards a more constructive practical application.
- The place of Asia within the merino supply chain from the perspective of the Italian suiting industry, both from a manufacturing and consumption point of view.
- A broader discussion of future prospects for the Italian textile industry.

## The Global Economic Climate

### Decrease in Demand

From a New Zealand perspective it was a sobering sight to witness the degree to which the Italian textile industry has been affected by the economic crisis. The majority of processors throughout the chain were witnessing a drop in demand ranging between 25% and 45%. Generally speaking, this has resulted in:

- a significant proportion of machinery sitting idle
- a reduction of the number of shifts worked
- a decrease in the purchasing of raw wool

Despite the depressed market, it is inspiring to witness the continued passion for the textile business, and the over-riding positivity maintained by those within the industry during a period which is obviously difficult.

### Capital Investment

The sheer intensity of capital investment within each manufacturing plant leaves little scope for a reasonable return on investment in a downturn.

The market for second hand equipment (never buoyant at the best of times) has plummeted in line with fabric demand, leaving companies in a difficult situation when considering the purchase of new technology; the cost is unlikely to be reasonably offset by the sale of older equipment.

Few companies would consider themselves in the market for a large scale capital outlay at this time, but continued investment must be made in technology in order to maintain a position within the market.

The current situation has raised the importance of market forecasting; those companies in a strong financial position going into the recession and with the foresight and belief to invest in the future will likely be those who lead the industry out the other side.

## Staffing

As with machinery, staff too must be managed effectively to cut costs whilst avoiding redundancies.

There is a social support structure termed a Redundancy Fund (*Cassa integrazione guadagni*) within Italy which allows for staff to be kept on an 80% retainer for a limited period when no work is available (Locke & Baccaro, 1998<sup>27</sup>). While the retainer is funded by government, the cost is recouped from the manufacturers in the form of taxes and levies.

Although costly in good times, the system benefits industry by providing a buffer in a challenging economic environment, in the process increasing operational continuity when the situation improves.

A further way in which the processors have avoided redundancies is to decrease the number of shifts worked per day. Over the period the 2009 Biella Ambassadors visited (Feb 2009), staff at most mills were working fewer hours than they had been six months previously, but they still maintained some level of employment, and the prospect existed of a return to full employment in the future.

## Implications for the Grower

Without doubt the most fundamental implication of the economic environment is that growers of certain fibre specifications will see a significantly reduced demand for their fibre, and in turn a fall in the transaction price. However, this will be offset to some degree by a fall in the value of the New Zealand dollar compared to its 2008 level.

It must be remembered that processors must, are, and will continue to purchase wool.

The old adage runs true - growers must differentiate their product wherever possible to position their wool ahead of that of competitors, in the process raising the demand and ensuring that they receive the best price in a despondent marketplace.

Most critical to achieving differentiation is a return to the basics of quality. In times such as these there is far less scope for leniency when appraising quality.

A decrease in demand enables processors to be far more selective when deciding on lots to purchase, and lines with excellent quality characteristics are being rewarded. In particular, attributes which cause hindrances to processing are being subjected to

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<sup>27</sup> Locke, R. M., & Baccaro, L. (1998). The resurgence of Italian unions. Sloan School of Management, Massachusetts Institute of Technology

increased scrutiny, particularly the proportion of vegetable matter and/or poor classing, and this may have long term implications also.

By way of example, New England Wool, a major wool purchasing agency supplying components of the Italian industry have indicated that they may look to maintain the more stringent specifications they have adopted when the market strengthens in the future.

Accurate and consistent classing is a further area in which a grower can develop their own brand, and ensure the demand for their product even when others are faltering.

### Future Viability of the Wool Industry

For the future viability of the fine wool industry it is vital that judicious investment continues to be made in terms of marketing and research. Although these are frequently the areas that are trimmed in an uncertain economic climate, these functions must be maintained if New Zealand's merino offering is to maintain its pre-eminent market position and, in fact, gain advantage from the market correction currently taking place.

While caution is advised, it would be foolish to retrench completely. The exciting opportunities offered up by the unique economic situation currently being witnessed are numerous and, if grasped, will ultimately lay the foundation for the future success of New Zealand merino wool on the world stage.

The long term outlook exhibited by those within the Italian wool processing industry remains positive but it would be naïve to think that New Zealand has felt the worst effects of the crisis, nor that the situation will improve before the close of 2009.

From a grower perspective, one must take a similar long term horizon when considering the crisis gripping the markets, and remember that an investment in quality will pay dividends both now and in the future.

## Balance between Heritage and Progression

In times of obvious economic hardship perhaps the most intriguing business dynamic witnessed was the balance between heritage and progression being adopted by various companies operating within the wool processing supply chain. This was particularly refreshing within a country renowned for its reluctance to move outside of tradition.

### Attitude towards Familial Succession

In an industry renowned for its tendency towards a strategy of familial succession, it was interesting to note that some firms are now looking towards outside expertise, particularly in the form of independent directors, in an effort to gain a fresh perspective on their operations. Lanificio Successori Reda provided a fine example of this.

While going against the grain of heritage (which by its very nature defines to a large degree the Italian way of doing business) this can only be a healthy thing in the interest of long term business viability. In fact, training of such personnel is the primary objective of the Biella Master of Noble Fibres program.

There was an obvious divide between maintaining the familial link that has been passed down for many generations, and sourcing expertise that was perhaps not available within the family.

It will be interesting to note the differing fortunes of those that have chosen to follow alternative paths in this regard.

### Attitude towards Diversification

Similarly to above, the increasing receptiveness towards a policy of diversification both within and outside of the textile sector was surprising. It appeared that traditional attitudes were changing in this regard - this could at least partially be attributed to the growing acceptance of independent counsel.

Many companies who in the past would have been unlikely to conduct business outside of the particular arena in which they had always been involved are now looking to expand vertically, as well as into areas unrelated to textiles. It is likely that this is a function of a business seeking:

- i. greater control over the entire supply chain
- ii. a commanding role in driving the direction of textile research
- iii. diversification in their revenue streams

Some would argue that a move away from a core competency is a dangerous strategy that could ultimately impact upon the long term viability of a company, primarily due to a dilution of focus. However, in this case it is believed that such a shift will facilitate the application of a fresh perspective to the core competency, and may well enhance it in the process.

## Power of Worker Unions

In recent times businesses have had difficulty competing with companies from neighbouring countries due to a lack of labour flexibility afforded to employers.

The power of worker unions in Italy has traditionally been great; nearly 40% of the workforce is affiliated with such an association (Molchanov, 2008<sup>28</sup>).

According to Matteo Cerruti of Lanificio Cerruti, union groups have moved away from political activity and taken a more practical role that has been far more beneficial for both parties.

Nowadays the majority of mills maintain a healthy working relationship with such groups; this has been welcomed by Italian processors.

A key driver in this change has been the diminishing leverage of labour groups as production is moved offshore, particularly to Asia.

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<sup>28</sup> Molchanov, P. (2008). Berlusconi faces tough battle to reform Italian economy. *National Business Review*, Retrieved 17th April, 2008, from <http://www.nbr.co.nz/comment/pavel-molchanov/berlusconi-faces-tough-battle-reform-italian-economy>

## China's Role in Textiles

The role of Asia within the world economy is particularly topical at this time. The impact of the Asian labour and consumer market - particularly that of China, was something that nearly all of the processors discussed.

More specifically, the increasing market freedom being afforded to the Chinese people is having a dramatic impact upon the textile industry. In relation to wool, China's influence on the textile market is three-fold:

- i. The region is a producer of fine cashmere, a substitute for merino wool.
- ii. China represents a cost effective location for production facilities. The nation has an availability of relatively inexpensive capital, and a close proximity to major markets.
- iii. China has a growing number of people with the necessary wealth and associated desire for fashionable western clothing as produced in Italy.

### China as a Producer of Cashmere Fibre

Cashmere is a fibre sourced from the undercoat of the double fleeced domestic goat, most commonly of Central Asia – predominantly the regions of Inner and Outer Mongolia, Kazakhstan, and Kyrgyzstan. The yield of raw fibre is approximated at 150grams per animal; the world clip is between 15,000 to 20,000 tonnes per annum.

The cashmere produced within China, particularly Inner Mongolia is amongst the highest quality in the world. As such, it is a direct competitor to merino fibre. However, from a New Zealand perspective there is currently little correlation between cashmere and merino prices at the raw fibre level.

As cashmere growers become more closely linked with buyers, the market more focused, and the fibre better attuned to customer requirements, then it is likely that cashmere will play an increasingly direct role in terms of competing with New Zealand merino fibre.

While cashmere acts as a competitor to fine merino wool, the fibre also offers opportunities for blended products. This is an area of considerable potential for merino products in the future.

Despite China's reputation as environmentally unfriendly, the steppes of Inner Mongolia are a world away from the imagery associated with the streets of downtown China; in reality the produce from the region is essentially organic.

The close proximity of the growers to the fibre supply chain partners affords cashmere a significant advantage in terms of processing costs.

While it is unlikely that the cashmere industry will reach a level of reliability in terms of quality and supply to rival that of the New Zealand merino wool industry in the near future, synergistic opportunities may arise in time.

### China as a Processor and/or Manufacturer

China offers an abundant source of relatively inexpensive capital, coupled with the land resources necessary for the construction of large textile processing plants. This has been extremely enticing for foreign processors.

The location of China at a mid point between the European and North American markets offers the region a considerable advantage when attracting foreign

investment. This has been compounded by the rapidly growing domestic market for premium quality clothing within China.

China's geographical location along the supply line linking New Zealand and Australia to Europe, coupled with the nation's growing domestic market has enticed many wool processors to locate their facilities, or source production, offshore.

Concerns have been raised both from Australasia and Europe with regards to the loss of work in these countries. The reality is that manufacturers have to make a choice, either:

- offer a more expensive product whilst leveraging the quality characteristics associated with being 'Made in Italy'
- compete on price by sourcing cheaper production alternatives.

## Country of Origin

Many Italian textile products - particularly suits, are branded 'Made in Italy' or even 'Made in Biella'. The 'Made in Italy' brand is a much debated concept in itself. Manufacturers, notably Loro Piana and Carlo Barbera, raised concerns surrounding what exactly it means to be 'Made in Italy', and what proportion of manufacture must be carried out within the nation's bounds before it can truly be said to have been 'Made in Italy'.

Those that are processing and manufacturing product entirely within Italy are actively seeking stronger legislative support in order that they can compete with pseudo or semi-pseudo Italian brands that are employing a decreasing proportion of domestic processing input.

The alternative to maintaining a higher cost Italian production chain is to shift some or all of the manufacturing components to a less expensive location, most frequently within South East Asia, and in more recent times China.

Although more cost effectively produced, the perception is that quality will be compromised as a result of Chinese production.

Whether or not this perception is justified is a discussion for another forum; however the fact remains that the 'Made in China' brand does not represent consumer driven purchase platforms such as high quality, prestige, style, or sustainability.

A company must find a balance between a cost reduction and a degradation of their own brand.

The most favoured method of conducting business in China has been to enter a joint venture with a local partner. In this way the foreign company is able to gain benefit from a reduction in labour costs and the partner's experience and social capital in terms of dealing with the often complex political environment, while at the same time being able to influence the standard of quality that the produce must adhere to.

## China as a Consumer

The third route in which China is having an influence on the textile market is through their role as a consumer. As the Chinese population has been allowed to accumulate a degree of personal wealth, a growing number are achieving a state of affluence whereby they have the means and the desire to purchase high priced, fashionable clothing.

This has been a key driver in the increasing retail offering of Italian products within China. A number of Italian companies have chosen to pursue this market by offering

garments through their own retail stores or through existing luxury outlets. The Ermenegildo Zegna Group is one such company that has entered the Asian retail market, both through own branded stores, and through the purchase of a 50% share in the Chinese company SharMoon.

The purpose of the Ermenegildo Zegna Group's move into Chinese retail was not to facilitate the movement of production offshore. Rather, the decision was purely a reflection of its increasing Chinese customer base.

Despite the current economic situation, the indications were that this trend would continue in the future, and that the high end Chinese market would take on a larger role in terms volume of final goods purchased.

# Future Prospects for the Italian Textile Industry

## General Prospects

In such tumultuous times it is difficult to appraise in detail the future of the Italian textile industry. However, while currently deflated, the prospects for fine wool in Italy seem assured.

On one hand there is an overall suiting market seemingly in a state of maturity. However, this is being offset by increasing flexibility with regards to product offerings, and a growing research and development function.

On the other hand, it must be remembered that New Zealand merino is a niche segment within the total world merino clip. To this end the prospects for New Zealand produce do not correlate perfectly with world clip trends.

## Prospects from an Italian Manufacturers Perspective

Suit manufacturers are well aware that the future of their produce lies in their endeavours of today.

The companies themselves are investing heavily in the maintenance of their product positioning as exclusive in terms of fibre and quality.

At the same time they are investing in research and development both within and outside of their traditional product lines in order to develop a more functional and diverse range of fabrics.

As the traditional fine wool suiting market matures, it would seem that that most companies are looking to expand their ranges in an effort to refresh their product offering and establish a host of revenue streams from which to draw, but at the same time holding onto the core attributes of quality and the traditions upon which their brands have been constructed.

## Prospects from a New Zealand Grower's Perspective

From a New Zealand grower's perspective, the future for their fine wool in Italy looks positive. The foresight shown by the industry has the New Zealand clip well placed amongst its competitors when considering current and future issues, particularly with regards to quality, ethical, and environmental concerns.

The underlying demand for New Zealand fibre remains strong; the processing characteristics and respected ideals that the wool represents continue to be highly sought after.

This positioning will be particularly valuable as it becomes more common for both prospective customers and advocacy groups to question the origin and conditions under which a garment and its associated inputs have been produced.

In saying this, it is important not to rest on the work already completed, and to continue to look into the future in an effort to pre-empt the next significant consumer issue. In this way we can ensure that New Zealand merino stays at the forefront of the world fibre market.

# Production, Processing and NZ Merino Positioning

## Introduction

The Italian mills strive to produce fabric and garments of the highest quality and these cannot be produced to exacting standards without the use of correspondingly high quality fibre. A major part of their success in producing this quality of fabric is their passion for wool at all stages of the production and manufacturing process.

All the mills had different parameters around their fibre requirements but there were noticeable trends throughout. This section discusses the requirements of the Italian mills relating to the supply of Merino fibre from New Zealand and, where appropriate, draws comparisons with Australian wool.

## Wool Classing and Specification

The mills visited consistently defined wool quality (for their purposes) in terms of:

1. Micron (diameter)
2. Style (sometimes referred to as resilience)
3. Strength (sometimes referred to as resistance)
4. Length
5. Absence of faults – for example, relating to colour, VM, etc.

## Micron

The mills visited were typically using wool between 15 and 19 microns in diameter (although, several processed lots significantly lower, and sometimes higher, than this). It was noted that the average diameter of wool is typically 0.2 micron finer in top form than when measured subsequent to harvesting. One comment that was made by several processors was that 'micron is important, but should not be pursued at the expense of strength and style'. One mill went so far as to question why a significant proportion of NZ farmers continue to try and produce ever-finer wool, when, in theory, a higher supply should ultimately lower the price – something made worse by what they perceived to be an oversupply (stated to be around 30%) of finer wool in the current market. Some parallels exist with comments in the most recent Merino Inc Chairman's report, regarding concern with the continued on-farm focus on producing finer micron wools for the specialised spinners market. Our land and temperate climate are well suited to producing top-making wools, as well as meat. This is why he questioned the obsession with producing spinners type wools, especially with the active outdoor market experiencing such strong demand.

In addition to a measurement of the mean fibre diameter, wool processors use several other measures (eg. Coefficient of Variation in diameter (CVD), and the % of fibres above 30 microns) to obtain a picture of how well wool will process and perform in a finished product. CVD is a measure of the degree of variation in micron existing within a single wool sample- whereas the number of fibres above 30 micron will impact upon the degree of prickle experienced in the final garment. Measures of both are quoted in auction catalogues for NZ Merino.

In their pursuit of ever-finer, high quality wools, and as a profiling exercise, Loro Piana runs the record bale competition for micron – with last year's bale setting a new record at 11.5 microns. This was won by Highlander Station in Australia, and has been for the last five years. Ben Ohau Station won the competition in 2001 and 2002 and Mt Cook Station in 2000, and the finest recorded bale from New Zealand

was 11.8 microns (see Figure 8). Loro Piana has the capability to process a single bale and believe they are the only company that could process such bales as a single lot.

**Figure 8** Loro Piana’s World Wool Record Challenge Roll of Honour<sup>29</sup>

<b>ROLL OF HONOUR</b>		
<b>WORLD WOOL RECORD CHALLENGE CUP</b>		
<b>YEAR</b>	<b>GROWER</b>	<b>NATION</b>
2000	Ash Windradeen Station	Australia
2000	Mount Cook Station	New Zealand
2001	Jema / Benalla	Australia
2001	Highlander Station	Australia
2001	Ben Ohau Station	New Zealand
2002	Highlander Station	Australia
2002	Ben Ohau Station	New Zealand
2003	Nerrawak Station	Australia
2004	Highlander Station	Australia
2005	Highlander Station	Australia
2006	Highlander Station	Australia
2007	Highlander Station	Australia
2008	Highlander Station	Australia

In a similar fashion, Ermenegildo Zegna runs a ‘finest fleece’ competition, with Ben Ohau Station winning this in the 07/08 season with a fleece of 1.47 kg at 10.8 microns - the prize being the weight of the fleece in gold. Zegna put all the fleeces from the competition together to make fabric, and then have a special selling campaign. They produce a cut length of fabric which is embroidered with the name and micron specifications. 50 to 70 suits are produced from this, which they claim to be the best suits in the world, and sell for around €8000 each. These are made to measure, and are bought by the rich and famous. One anecdote relayed to the team involved a Greek businessman who buys six such suits at the same time so he can have one suit at each of the homes he has within different countries – thus avoiding the need to travel with one.

The Ermenegildo Zegna trophy competition started in 02/03 but was suspended for the 08/09 season due to adverse publicity around the mulesing issue. They will not accept mulesed wool for the 09/10 competition, which has been renamed ‘The National Wool Challenge’, and will have a different format, aimed at reinvigorating the competition. Fineness will no longer be the primary characteristic assessed – rather, fleeces ranging from 14 to 19.5 microns will be accepted, and the title will be awarded to the best overall fleece.

## Style

After diameter, style is probably the next greatest determinant of wool price. The better the style, the better the wool will process. Style is often talked about in terms of elongation, resistance, elasticity, full body and density. Elongation is very high on the list of priority wool characteristics for Italian processors, and is strongly related to crimp definition. This allows the fibre to stretch during processing and, as good style wools generally have a higher degree of fibre alignment in the staple also, combines to result in less breakages and wastage during processing. The mills also find wool with better style results in a fabric that has a better drape and appearance.

Many other aspects contribute to the overall style of wool (for example - tippiness - the absence of which results in more consistent colour uptake during the dyeing process), and several excellent guides to style are available elsewhere.

<sup>29</sup> Courtesy: [http://www.loropiana.com/eng/eccellenze/lane\\_extrafini.php](http://www.loropiana.com/eng/eccellenze/lane_extrafini.php)

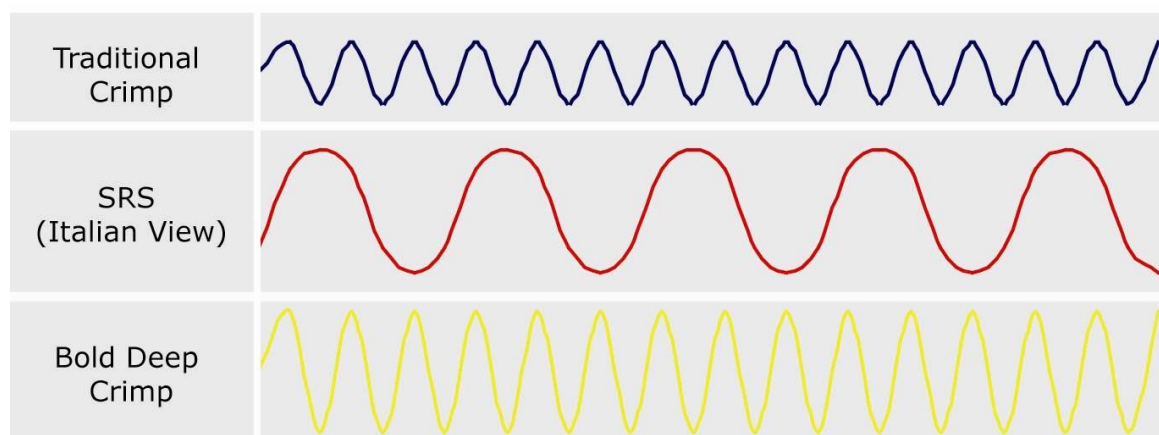
In general however, the Italians struggle to obtain enough fine wool from New Zealand that meets their strict requirements around style - and this was cited as another reason why it is routinely blended with Australian wool.

Some Italian mills do not like soft rolling skin (SRS) wool. The mills taking this view claimed (citing independent testing) that there is less softness in SRS wool when compared to the same micron of traditionally crimped wool. They believe SRS type wools do not perform or process well in the manufacturing systems used in their mills and so will not buy them. They like the style of wool 'to reflect its micron'.

In saying this, it is important to consider the above mentioned point in the context of the wider textile sector. While the processing techniques/equipment/products characteristic of mills in the Italian textile industry may not be suited to SRS type wools, there are other textile sectors whose processing routes/products do suit this style of wool (and some Italian mills undoubtedly use SRS type wools).

Discussion with Italian processors about SRS wool also highlighted some confusion as to what SRS wool actually looks like. Their explanation is presented diagrammatically below (Figure 9), showing relative amplitudes and frequency of crimp in different wools.

**Figure 9.** Outline of varying wool styles



Many Italian processors spoken with disliked SRS because it has a broad crimp (along the length of the wool fibre) which they claimed did not produce the elongation that traditional crimp does, resulting in more breakages during processing. SRS wools were also stated to be longer in length when compared to more traditional styles.

Bold, deep crimping wool has more elongation and elasticity than traditional crimp – and in New Zealand we tend to refer to this as SRS. The problem lies with the terminology - what New Zealand wool growers perceive to be SRS is something very different from the Italian view point. Many Italian processors will not buy SRS wool (as they define it) and they were found to hold very strong views about this.

From an Italian standpoint, much of the wool produced in New Zealand for the spinners market is also not what they would consider to be spinners-type wool, but rather, they would refer to it as best top making wool. The Italians can source the majority of their spinners-type wools from the New England region and the Newcastle sales (Australia) due to their environment, fineness, volume and wool classing available in those regions. Such wools have a tight crimp and are not too long in staple length.

## Strength

Resistance in (or strength of) the fibre is one of the most important determinants of greasy wool price, for a given diameter. This is because breakages of the fibre, which can occur at any stage of processing (but are most pronounced during carding), increase wastage and impact product quality. The strength of the fibre is measured in Newtons per kiloTex (N/kTex) – generally in greasy form - and wool that is 40 N/kTex or above is desirable for processing. This is because such fibre can handle greater tensile stresses, resulting in fewer breakages and less short fibre (which is ultimately combed out as waste, or will contribute the shedding, pilling etc). However, the test for greasy staple strength is not ideal because it provides only an average value for something that is highly variable (between fibres, staples and fleeces). Generally accepted limits for the accuracy of the IWTO-30 test method are  $\pm 6$  N/kTex). This is why different average results can be obtained when individual lines are retested for strength.

In addition to the average strength, wool buyers also consider the strength result for the lowest 25% of fibres tested (effectively the 15<sup>th</sup> weakest staple of the 60 that are tested) – and this figure is usually denoted SS25 in the sale catalogue.

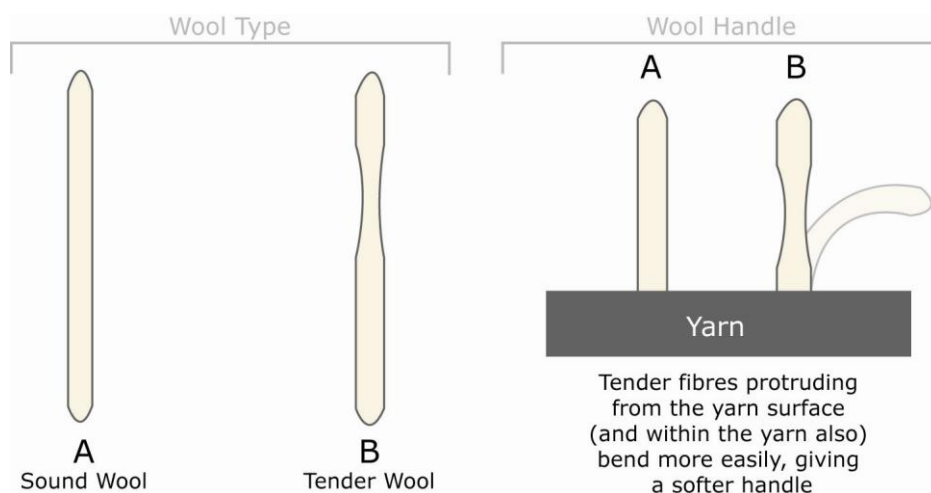
The Italians prefer not to buy tender wool for the above reasons, and if they do so, it is often included with stronger wools to minimise its impact in the final blend. When questioned about their acceptance of hogget wool types, the processors indicated the hogget tip is not a problem but that such wools were often discounted on the basis of their lower elongation.

The point at which a staple breaks under strain (known as 'point of break') is also taken into account. This measure determines the proportion of breakages at tip, mid and butt points respectively, and is a reflection of environmental stresses experienced by the sheep during the year. This measure is important because it gives an indication of the final processed length of the fibre.

New Zealand produces wool that has, on average, a more favourable (consistent) diameter-length profile than Australian wool – because of the differences in environments between the two countries. A schematic of the cross section of sound wool versus tender wool is given in Figure 10. An interesting point was raised in relation to this by several processors – while sound wool should result in less wastage because of its greater resistance to tensile strains, the absence of a discernable thin spot confers it a higher overall bending rigidity (stiffness). The net effect of this is that top/yarn made from wool with a cylindrical rather than 'hour-glass' diameter-length profile has a somewhat harsher handle (higher bending resistance, and possibly degree of prickle also, if the thin spot is close to the fibre end) than fibre of the same average micron but with a variable diameter-length profile.

The Italians believe the high strength that is characteristic of New Zealand fibre is derived from a better ability to manage the growth and seasonality experienced in the High Country.

**Figure 10.** Sound wool versus tender wool.



New Zealand wool is almost always blended with Australian wool (ratios of 30% NZ to 70% Australian being common) to reduce the proportion of imperfections and wastage, while still achieving an acceptable handle. A notable exception to this is the Loro Piana Zealander range, which processes very well due to some careful machine manipulation and the wool's inherent strength, but does exhibit a somewhat different handle to other product manufactured from the same micron Australian wool.

Classing of the wool for soundness is very important for reducing wastage and costs. Premiums will always be paid for sound lines.

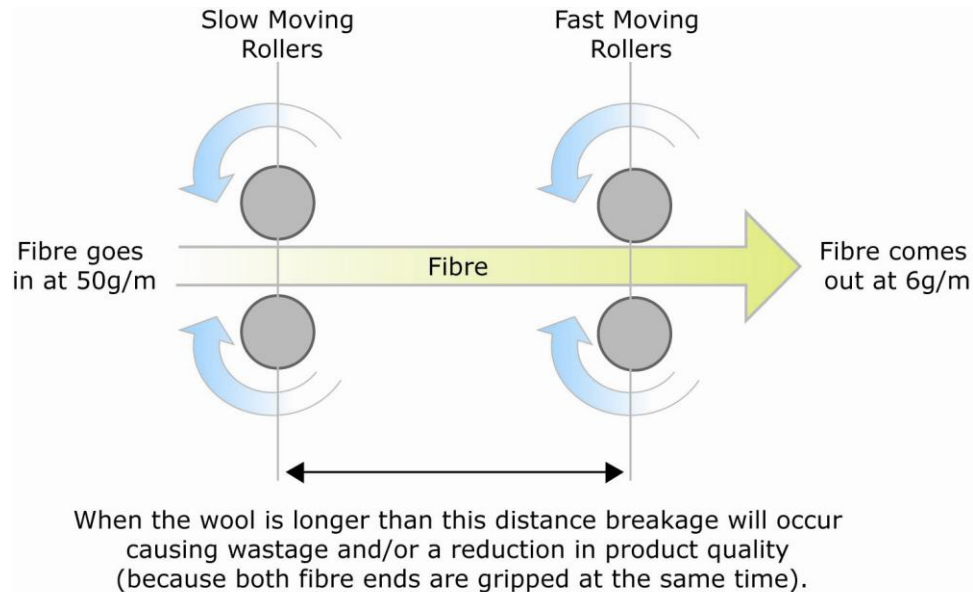
## Length

Strength is indirectly related to fibre length N/kTex in that the longer the fibre, the greater the statistical chance of encountering a thin spot – and thus, the lower the N/kTex. Up to 70-80 mm greasy fibre length is the most desirable length for Italian processing. This reduces in length to 65-75 mm in top form because of wastage of the tip and broken fibres. The mills can process longer wool but they do not get the advantage of the extra length and can sometimes have more wastage and broken fibres due to the set-up of the machinery.

The machinery used in making the top is sourced from around the globe, but operates on the French-combing system. This technology has evolved to suit fibres up to 70-75 mm in length. Wool constitutes around one percent of the world's textile fibre consumption and of that around three percent is merino, meaning little demand exists to develop machinery specifically for processing wool. Rather, technologies for processing of other fibres are frequently adopted to wool, and/or iterative developments of existing processing systems made.

Of particular note to NZ producers is that wool over 80 mm in length is difficult to comb (although this was less so using the now-obsolete English combing system), resulting in more breakages of the fibre and therefore more wastage. Advantage cannot be taken of extra fibre length (say above 85 mm) when the sliver is drafted because such processes rely on very strict fibre control and the machines used to have limited scope for adjustment of settings. This is explained schematically in Figure 11.

**Figure 11** Wool sliver being drawn



Prior to auction, wool is tested to establish its length (Hauteur) – and a prediction of processed staple length made by applying a set of predictive formulae - the TEAM equations. Another input into these formulae is the CVH or Coefficient of Variation of Hauteur (a measure of the variation in fibre length), which should ideally be low but not so low that it effects drafting processes and results in a fibre that will not process well and a highly uneven yarn. Classing for evenness is also very important as it enables mills to blend different types of wool to produce the type of top they require. Given the CVH of New Zealand merino is typically lower than that of Australian wool (maybe 36% compared to 40%) this is another reason the two are often blended.

### Vegetable Matter (VM) and Contaminants

Most of the Italian mills visited commented the percentage of VM (and other contaminants) in New Zealand wool very low compared to what it had been historically, and with Australian wool. In addition, the VM we do have is relatively easy to comb out compared with a lot of the burrs and seeds found in Australian wool.

### Colour

The mills visited cited New Zealand wool as being of extremely good colour and brightness – which is a desirable property in that a whiter substrate enables a dyer to dye wool to a much greater range of colours than wool that is yellow.

### Bale Specification Labelling

Some time back the New Zealand Merino Company changed the labelling system utilised for NZ wool, in order to match the AWEX system - the most common global merino labelling system. The Chinese (who represent around 70% of the New Zealand merino market) are satisfied with this new system; however some of the Italian mills were less endowed of it. They stated a preference for the traditional descriptions and suggest the AWEX standard has actually made their job more difficult. This was more so for those mills wanting to derive a picture of the overall clip originating from a specific property, and how this has been classed out.

The New Zealand Merino Company has considered changing the system to a combination between AWEX and the traditional system. However, AWEX is currently

reviewing their system so it was decided there was little point in changing their system again until AWEX has reviewed theirs.

## Contracts vs. Auction

Most Italian companies visited favoured the auction system for buying their wool because they believe that this to be the most transparent system, and one that has served them well historically. Those involved in direct supply contracts had found these a useful mechanism also, but still purchase the majority of their wool through auction. They claim they get a 'level' (spot) price at auctions and this is the best 'market check'. The industry is very traditional but they agree that the contracts are a good tool to minimise risk for the grower. The Loro Piana contracts for the Zealander range have been very successful, and Reda has recently offered contracts to growers through The New Zealand Merino Company.

Several Italian companies, as part of their expansion into other facets of the wool supply chain, have taken ownership of wool purchasing entities. For example, Reda and Barberis established New England Wool in 1990 in Australia to source wool for their particular needs. They purchase approximately 30,000 bales of fine/super fine greasy wool per annum. Schneider purchases greasy wool for Loro Piana and Zegna, among others. Several other mills visited purchased their wool in top form, and in one case, in yarn form.

The majority of Italian processors spoken with expressed a desire to see growers paid more for their wool, recognising that for the overall supply chain to be successful, all stakeholders need to have sustainable businesses. However, they also observed that just with any other product, the market drives the price and the end consumer sets that market. These are the constraints within these are constraints within which the entire chain operates.

## Unmulesed Wool

The demand for unmulesed wool from the end consumer buying fine wool suits is not as strong as in the outdoor market, although the Italians recognise this is becoming an ever more important issue. Most of the mills are being proactive and looking to source unmulesed wool, but more than one expressed a concern that ultimately there may not be enough volume available to meet their likely demand.

In relation to the demand for unmulesed wool, one example cited was for Reda, where last season they processed a five hundred bale line for one customer. New England Wool (on behalf of Reda) also paid a \$100 rebate per bale to growers supplying unmulesed wool, and Reda presented a letter to the team they had received from PETA thanking them for their efforts in support of the cessation of mulesing.

Many of the mills visited were not involved in garment retail so, for them, it was their fabric customers asking about unmulesed products rather than the end consumer. Whilst these consumers are undoubtedly asking increasingly about the mulesed status of wool products, less well understood is their willingness to pay a premium for such ethical or environmentally sustainable products. At the present time this would appear limited. However, that said, it is also likely that market access for wool from mulesed sheep is likely to become increasingly restricted compared to unmulesed.

Several companies expressed a view that it will be important to maintain and develop a robust certification scheme for unmulesed wool. The Zque brand has been developed by the New Zealand Merino Company for this purpose.

## Closing Comment

It is hoped that the insights the team gained into the Italian worsted industry, wool processing and marketing, fashion and design, and raw material requirements can now be built upon and (through interaction with growers, and key users of NZ Merino) and translated into commercial opportunities for the NZ Merino industry.