Alpaca, yak and mohair are a few of the fibres vying for a position in performance clothing. Like merino, these alternative wools have good stories to tell, and they also have unexpected performance features.

New wools in stock

The merino wool trend in performance clothing has inspired many. The natural fibre has successfully reclaimed its place as a performance material suitable to be worn next to the skin, in winter and in summer. In so doing, it has opened the door to other types of wool endowed with their own set of technical characteristics.

Kora, based in the UK, started selling its yak wool performance baselayers in September 2013. Before launching, Michael Kleinwort, a passionate mountaineer familiar with the Himalayan highlands, but a newcomer to textiles and clothing, spent several years studying the fibre and setting up sourcing. He believed the performance and next-to-skin properties of yak wool had potential, because he says: "Merino sheep live at 1,000 metres above sea level while yak live at 4,000 metres, and yak wool is often mistaken for cashmere."

"Yaks are impressive," asserts Mr Kleinwort, saying they are of great use to nomadic communities. "The animals provide dairy products (milk, cheese, butter, yogurt); they are slaughtered for their meat; their skin is transformed into leather, and their dung is used for fire, a matter of importance for people living above the tree-line." The long and coarse yak hair fibres are used to make ropes, tents and sackcloth. The finer yak down, which the animals naturally shed when they moult in the springtime, is the fibre used for clothing. It is, however, not always collected. "Yak herders in China no longer use the wool for their own garments. They now wear ready-made clothing," the Kora founder points out.

Testing conducted by SGS found that yak wool is 40% warmer than merino wool, weight for weight, and 17% better at transporting water vapour than merino. Like conventional wool, yak down is considered naturally antibacterial. "Spikes run up the yak wool fibre follicle, preventing bacteria from lodging in the fibre," says Mr Kleinwort.



UK-based Kora has launched a short range of performance baselayers made in 100% yak wool.

Kora

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The Henjl collection, made in merino and virgin wool, is knitted and manufactured in France.

Henjl

Yak wool's flex

The reason yak wool is warmer weight for weight than merino remains something of a mystery. Referring to a study on the skin comfort of wool fabrics conducted by CSIRO (Australia's national science agency) Mr Kleinwort notes that "the 'buckling threshold' of a fibre is connected to the perception of itchiness or softness and is an interesting alternative to the micron-level story. I personally suspect these two factors explain how we come to perceive a fabric's softness."

To secure an ethical supply of yak wool, Kora works with nomadic herders organised in a cooperative, which currently counts 48 families. The company has also set up a system that guarantees a "middle price" to the herders, to which a 10% stipend is added, and distributed at the end of the season.

Performance alpaca and cashmere

Alpaca, another high-altitude animal, is the performance yarn of choice of a number of brands in the United States including Altera, Sports Alpaca and most recently, Komafram, a company launched by Daniel Feuerstein, son of Malden Mills founder Aaron Feuerstein. Alpaca wool is said to be 30% warmer, weight for weight, than merino. Its other distinguishing feature is that alpaca wool contains no lanolin, the substance thought to produce allergic reactions. Komafram blends the natural fibre with Tencel lyocell, produced by Austrian cellulosic fibre specialist Lenzing.

Dhu Performance, a Scottish brand founded in November 2012, has set its eyes on reintroducing cashmere as a performance material. The young company points out that underwear worn by historical polar explorers and high-altitude mountaineers, including Sir Edmund Hillary, was made in the luxury fibre. Furthermore, few would accuse the fibre of being itchy.

Yak, cashmere and alpaca are admittedly niche products. According to the British Alpaca Society, roughly three million kilos of alpaca fibre are produced in South America every year, representing 0.04% of world fibre production. The fibre's global spread is rising, though, as the animal population grows in New Zealand and Australia. Alpacas have proven to be useful and reliable sheep guardians, but they are now also raised for their wool. Farmers in New Zealand have already formed a collective, Pacific Alpacas.

Mohair's smoothness

Yet another rare and luxurious fibre, mohair has distinctive properties that make it an ideal raw material for sports socks. Like all wools, mohair is good at thermo-regulating and resisting bacteria. However it has a different fibre structure: mohair wool filaments are smooth, they do not have scales like sheep's wool or cashmere, and they are hollow. These two characteristics mean mohair can help wearers avoid blisters and keep their feet dry.

"Mohair absorbs a lot of moisture that is drawn to the vein inside the fibre," says Denys Hobson, director of Cape Mohair, a maker of mohair socks for 20 years. "Merino also absorbs water vapour," he admits, "but the humidity remains inside the fibre. No other fibre expels moisture as well as mohair." For this reason, Cape Mohair socks have a high percentage of mohair at the foot, heel and toe areas.

"The smooth nature of mohair wool is both a positive and a negative," says Mr Hobson. "It gives the fibre its softness and anti-blister effect, but it makes it difficult to stabilise the knit." This remains a challenge for the development of compression socks at Cape Mohair as the leg portion must apply a constant level of pressure.

New developments in wool

While this exotic cast of fibres introduces new functional features to performance apparel, traditional merino and virgin wool are also inspiring new directions in lifestyle markets, as seen at wool-only French brand Henjl (pronounced "angel"), launched in 2011.

"Wool is an extraordinary fibre which has many uses," says Henjl founder and product

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Angora or mohair goats originated in the region of Ankara, Turkey. South Africa currently produces approximately 50% of total world production, according to Mohair South Africa.

Mohair South Africa

manager Henry Soulier, formerly at Eider. "Before polyester, people wore wool, and after polyester (implying when there is no more), they will still wear wool." The company's outer layer fabric, the Wool Shell, is composed of a virgin wool face fabric, a polypropylene/merino wool blend knit back and a waterproof, breathable and windproof membrane in between. Baselayer clothing is made in a two-sided knit with a wool face and Climayarn back. The later is a polypropylene/merino wool blend chosen for its ability to wick away humidity and dry fast. Henjl is also reintroducing boiled, or felted, wool. "We stop the felting process at an early stage so that the fabric retains some of its elasticity," says Mr Soulier. The resulting high-density material is twice as heavy as a standard wool fabric.

Danish knitter and wool specialist Thygesen & Birk has vastly expanded its range of fabrics for performance and lifestyle collections. The merino wool/polyester double knits for base layers are currently the company's most popular references along with jacquard knits for which the knitter has stepped up production.

"The factory is in full production," says Thygesen & Birk sales manager Jens Bjerrum. He says this is not only due to high demand for wool, but also attributable to brands bringing production back from the Far East. "Our clients are looking for shorter lead times, and though price remains an issue, it is sometimes more important to get the right product, in the right colour to market at the right time." The fact that the company applies low minimum orders (500 metres per colour) is also a strong draw for smaller brands. Thygesen & Birk sources its wool yarns from the Austrian spinner Südwolle.

Local manufacturing

Whether new or long established, these upscale wool brands have all set up local - and ethical - supply chains. Dhu Performance products are designed and manufactured in Scotland. For Alps-based Henjl, manufacturing is done exclusively in France with a yarn bought from Schoeller Spinning. From fibre to yarn to knit, Cape Mohair's sourcing takes place in the vicinity of Port Elizabeth, South Africa. Michael Kleinwort, at Kora, has gone to great lengths to secure a short and ethical supply chain in China. Komafram plans to follow the same principles by manufacturing its clothing in the US.

So while all these brands promote fibres produced by animals living in remote and extreme climates, they are also keeping manufacturing close to home.

Wool fineness by animal type

Animal	Approx. fineness (microns)
Vicuña	12 - 14
Cashmere	13 - 19
Alpaca	15 - 28
Yak	17 - 22
Merino	18 - 24
Llama	20 - 28
Mohair	23 - 38

In 2012, wool represented only 1% of the world's fibre production (cotton accounting for 31% and man-made fibres for 68%). Its proportion is shrinking as man-made fibre production continues to grow, at a rate forecasted to be 2.9% per annum until 2020.

Sources: Incalpaca, International Yak Association, Lenzing, Mohair South Africa.

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