OBJEKTIVE VLIESDATEN VERSTEHEN

Warum objektive Vliesdaten verwenden?

Im Laufe der Jahre haben Umfragen zu den Schlüsselfaktoren, die das Kaufverhalten der Verbraucher bei Kleidung und anderen Textilien bestimmen, immer wieder gezeigt, dass der "Komfort" oder das "Gefühl des Produkts" einen großen Einfluss auf die Wahl des Kleidungsstücks/Produkts hat. Außerdem hat sich gezeigt, dass der Kunde im Allgemeinen bereit ist, einen höheren Preis zu zahlen, je komfortabler/ luxuriöser sich das Produkt anfühlt.

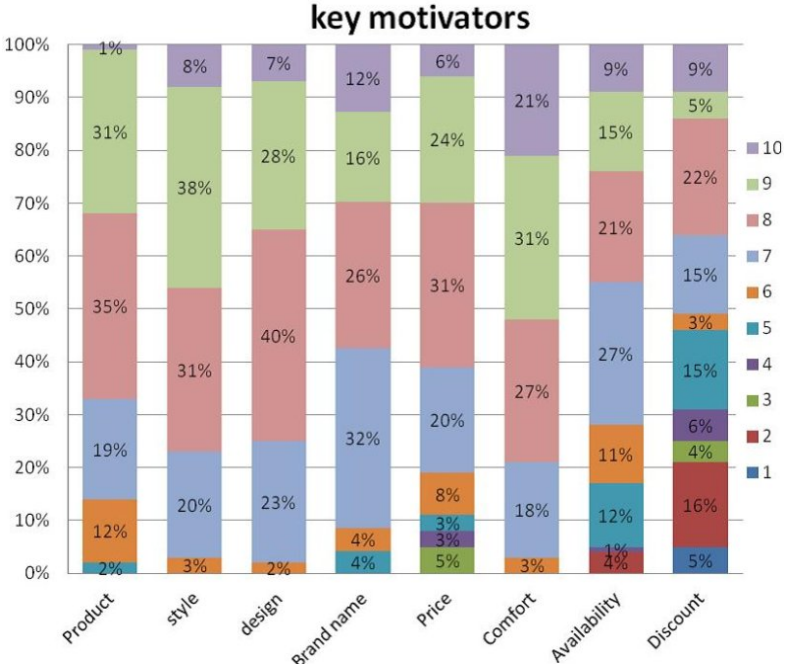

Tabelle mit den wichtigsten Motivationsfaktoren für den Kauf von Stoffprodukten. Farbe 1 ist "kein Motivationsfaktor" - Farbe 10 ist "höchster Motivationsfaktor". (Quelle: Researchgate 2007)

Aus diesem Grund zeigen Versuche zur Faserverarbeitung immer wieder, dass die beiden Vlieseigenschaften, die am ehesten für den "Komfort" oder die "Griffigkeit" des Endprodukts ausschlaggebend sind, der durchschnittliche Faserdurchmesser und die Schwankungen des Faserdurchmessers sind, insbesondere am "groben Rand".

Deshalb ist es für alle, die mit der Produktion von Naturfasern zu tun haben, sehr sinnvoll, ihr Verständnis für objektive Vliesdaten zu entwickeln. Sie geben Aufschluss über das genetische Potenzial von Zuchttieren im Hinblick auf ihre Fähigkeit, Nachkommen zu züchten, die am ehesten luxuriöse und begehrte Fasern produzieren. Sie kann auch dazu verwendet werden, den relativen Wert ihrer Vliese zu bewerten.

Darüber hinaus kann die neueste Fasertesttechnologie Profilgrafiken liefern, die über die Nährstoffaufnahme während der Wachstumsperiode des Vlieses Auskunft geben und den Züchtern/Produzenten somit wertvolle Informationen für das Management liefern.

Wie man eine Faserprobe nimmt

Bei der am häufigsten verwendeten Faseranalyse wird eine Probe aus der Mitte des Vlieses entnommen. Anhand dieser Probe können wir Annahmen über die objektiven Fasereigenschaften des gesamten Vlieses treffen.

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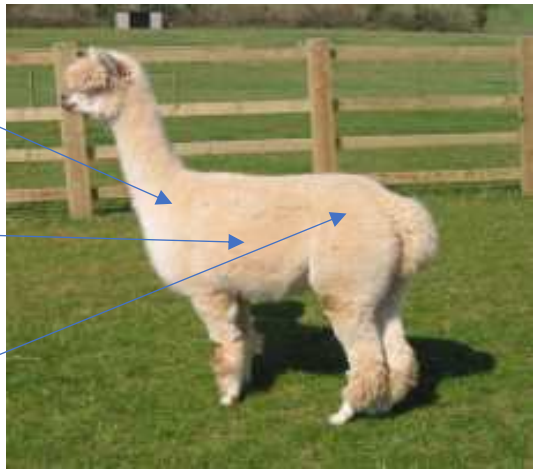
Die Schulterprobe wird von der Oberseite des Schulterblatts entnommen

Die mittlere Probe wird an einer Stelle entnommen, die auf halbem Weg zwischen Hinter- und Vorderbein und auf halber Höhe des Körperrahmens liegt. Dies ist die übliche Stelle für die Faserprüfung

Die Hüftprobe wird am obersten Punkt des Hüftknochens entnommen (kann leicht ertastet werden)



Idealerweise sollte die Probe direkt am Tier entnommen werden, um sicherzustellen, dass die richtige Probenstelle verwendet wird. Wenn die Probe während der Schur entnommen wird, ist es aus demselben Grund am besten, die Probe zu nehmen, während das Tier geschoren wird. Wenn die Probe entnommen wird, während das Vlies auf dem Schertisch liegt, können die Probenstellen stark variieren.

Die benötigte Menge der Faserprobe beträgt 3 oder 4 Faserklammern oder -bündel.

Ein Beispiel für 3 Faserklammern - die Mindestanforderung, um einen Fasertest durchzuführen.

Die Faserprobe sollte so nah wie möglich an der Haut geschnitten werden. Wenn die Probe nass ist, sollte sie vor dem Einreichen vollständig trocknen.

Die Proben sollten dann in kleine Papier- oder Plastiktüten gelegt werden. Wenn du Plastiktüten verwendest, sollten sie nicht versiegelt werden, damit die Fasern keine Feuchtigkeit durch Kondensation aufnehmen.

Ein Name oder eine Nummer zur Identifizierung sollte auf die Tüte geschrieben werden. Wenn du Strichcode-Aufkleber verwendest, solltest du diese fest auf die Tüte kleben oder zusammen mit der Probe in die Tüte legen.

Terminologie

Im Folgenden findest du einen kurzen Leitfaden zu den Begriffen, die bei der Fasermessung verwendet werden und wie wir diese Informationen interpretieren.

Micron: Unit of measurement for describing diameter of fibre. 1,000 microns = one millimetre. Fibre diameter is the single most important fibre trait with regard to commercial processing. It is also one of the most heritable fibre traits. Fibre diameter is the most significant price driver for natural fibres. Fibre diameter, however, is heavily influenced by nutritional intake, with variations of up to 12 microns being recorded over a single growing season.

Mic Dev: (Micron Deviation) The extent to which a sample deviates from the herd's/mob's average.

SD: (Standard Deviation of fibre diameter) A measurement to indicate the degree of variation in fibre diameter within a fibre sample.
One standard deviation is how far from the average you need to go to capture about two thirds of the sample. For example, a fibre sample has an average diameter of 20.0 microns with a SD of 5.0 microns. In this case, about two thirds of the fibres in the sample are between 15.0 and 25.0 microns. The lower the SD, the less variation in fibre diameter. SD is the preferred measurement for determining fibre diameter variation on individual animals. Animals with low SD generally have a greater predictability with regard to progeny's fibre traits, softer handle, greater tensile strength, and less variation over the fleece area. Fleeces with low SD are also inclined to result in superior processing.

Fibre diameter within a sample vary in two ways. Along the fibre, which is influenced by nutrition/environmental factors, and between fibres which is influenced by genetics.

CVD: (Coefficient of Variation of Diameter) Is the standard deviation expressed as a % of the sample's average. For example, if the average diameter is 20.0 microns with a SD of 5.0 microns, the CVD is 25.0%. (5/20 x 100). CV is used when comparing the degree of variation between two different types of data, for example, comparing variation in the value of different currencies. It should not be used when appraising fleece data.

CF: (Comfort Factor) Percent of fibres in a sample that are equal to or less than 30 microns. Fibres greater than 30 microns are generally responsible for the prickle sensation when worn next to the skin. To increase the comfort factor, we breed to lower average diameter (microns) and also breed to lower SD. The lower the average diameter and the lower the variation in diameter, the lower the number of fibres above 30 microns, the more luxurious the fleece.

CEM: (Coarse Edge Micron) The distance (in microns) between the average diameter and the finest extremity of the coarsest 5% of fibres. This is commonly used to evaluate the prevalence of primary fibres within a sample.

<15%: The percent of fibres in a sample less than 15 microns.

CRV: (Fibre curvature) expressed in degrees/millimetre. Generally, higher curvature is associated with higher crimp frequency.

SF: Spin Fineness: Calculation using micron and CVD to represent the spinning quality.

Micron Profile: A linear graph showing the variation in fibre diameter along the fibre staple/sample (environmental influence on fibre growth). Can be used for analysing the nutritional intake over the growing season. Micron profiles are read left (tip or commencement of growing season) to right (base of the sample or most recent growth)

Histogram: A bar graph depicting the distribution of average fibre diameter of the individual fibres within the sample. On the vertical axis of the graph is the micron of the fibre counts. On the horizontal axis is the frequency of distribution of those fibres counted. Put simply, the narrower the spread of the histogram, the less variation in diameter of the fibres. This equates with low SD and something to breed towards.

SL: Staple (sample) length expressed in millimetres.

Max Mic. The broadest point along the staple, expressed in microns.

Min Mic. The finest point along the staple, expressed in microns.

FPFT: (Finest point from the tip) Millimetres from the tip to the finest point in the staple. An indicator for the 'point of break'.

MFE: (Mean fibre ends) The average fibre diameter of the fibre ends [tip and base] expressed in microns.

Hauteur (predicted): The estimated length of fibres after scouring, carding and combing.

Example of two sets of results including data, histograms and micron profiles. Analysis of the results follows on next page.

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OFDA 2000 REPORT : SORTED BY TAG

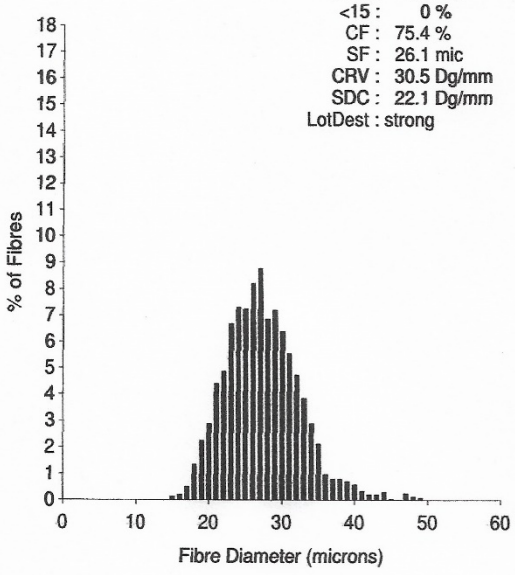
Sample Testing (2Records)

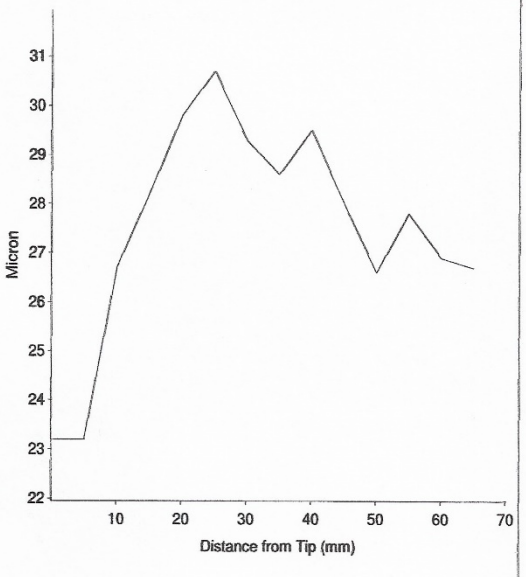
Job Details
Sample Alpaca Farm

Reference: 0100 - 0100
Tested: Jun 11, 2020 - Jun 12, 2020

EarTag : Alpaca1
Micron : 27.3 mic
SD : 5.1 mic
CVD : 18.7 %
CEM : 9.1 mic
<15 : 0 %
CF : 75.4 %
SF : 26.1 mic
CRV : 30.5 Dg/mm
SDC : 22.1 Dg/mm
LotDest : strong

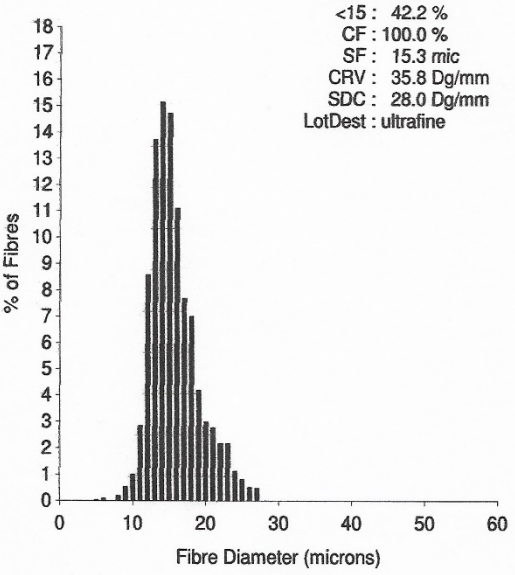
Staple Len : 70.0 mm
Min Mic : 23.2 mic
Max Mic : 30.7 mic
SD Along : 2.20 mic

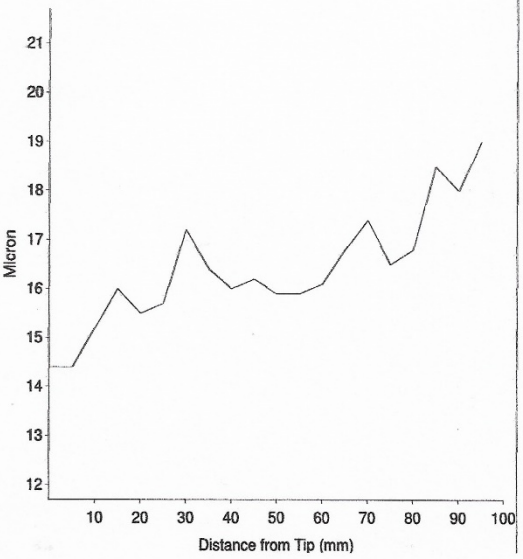




EarTag : Alpaca2
Micron : 15.7 mic
SD : 3.3 mic
CVD : 21.2 %
CEM : 7.4 mic
<15 : 42.2 %
CF : 100.0 %
SF : 15.3 mic
CRV : 35.8 Dg/mm
SDC : 28.0 Dg/mm
LotDest : ultrafine

Staple Len : 100.0 mm
Min Mic : 14.4 mic
Max Mic : 19.0 mic
SD Along : 1.20 mic





Analysis of Two Fibre Test Examples (Above)

Note that age is taken into account for more detailed fibre analysis, however, for the purpose of these examples, we shall assume both are around 2 to 4 years.

Top Example (Alpaca1)

The average fibre diameter for the overall sample is 27.3 microns. The histogram shows high variation of diameter of individual fibres, ranging from 14 microns to 50 microns, giving a range of 36 microns. For this reason, the SD is relatively high at 5.1 microns, (2/3 of the fibres are between 22.2 microns and 32.4 microns).

The comfort factor is 75.4%, meaning 24.6% of fibres are greater than 30 microns. The fibre from this alpaca would have a prickle feel if worn next to the skin.

The micron profile shows the sample's average diameter at the commencement of the growing season is about 23 microns, then rising sharply to about 31 microns before fining down to about 27 microns at about the time the sample was taken. This profile indicates the level of nutrition being absorbed by the fibre follicles rising dramatically over the first third of the growing season, then dropping until about the time the sample was taken. The rise in microns might be a result of increased quality and/or quantity of feed. The subsequent drop in microns might be a result of worm infestation, reduction in quality and/or quantity of feed or ill health.

This test result indicates the alpaca is not considered superior for breeding towards high value fleece production. The current fleece would not be suitable for luxurious end products.

Note that if only the first 10mm of growth was tested, then the fibre test result would indicate average diameter at about 23.5 microns, yet the true average for the sample is 27.3 microns.

Bottom Example (Alpaca2)

The average fibre diameter for the overall sample is 15.7 microns. As can be seen with the histogram, most of the fibres are centred close to the mean diameter as there is little variation in fibre diameter. Almost all fibres are between 9 microns and 28 microns, (range of 19 microns). This alpaca has a low SD of 3.3 microns, (2/3 of fibres are between 12.4 microns and 19.0 microns). As all fibres are below 30 microns, the Comfort Factor is 100%, and therefore this fleece would feel very soft and luxurious.

The micron profile shows a gradual increase in fibre diameter over the growing season. The average diameter is about 14 microns at the start of the season and finishes at about 19 microns. This indicates a gradual increase in the quality and/or quantity of feed.

The results indicate this sample is from an alpaca considered superior for breeding towards high-value fleeces, although this would rely on the alpaca possessing sound physical attributes such as desirable frame. NB – An alpaca possessing unsound physical attributes may result in inefficient conversion of feed to nutrition, thereby rendering the fibre of low micron in the same way as reduced availability of feed results in low microns.