

An Assessment of Collected Alpaca Testing Data from OFDA2000 2012 to 2021

It has taken a while but long, drawn-out examination of data collected from OFDA 2000 testing of the past fifteen years in the US has produced some interesting results.

Part of the reason for this study has been the wealth of information acquired over the years and the number of individual animals that have been tested over their lifetime, and in some cases, their progeny.

Users of this service know that I collect information on breed, sex, color and age and that I record hand-measured stretched and relaxed length of staples along with the age of the sample. The collection of this information allows some suggested conclusions to be drawn that perhaps help make for a better understanding of just what is really happening in the industry instead of conjecture based (often in my experience) on unmeasured anecdotal beliefs.

For several years I offered different universities access to my data as a research project but did not receive any responses let alone any interest.

I offer the following as my own interpretation of what has happened over the past fifteen years I have been testing huacaya and suri fleeces in the US.

Please note that the references below are all related to huacaya alpacas (unless otherwise specifically stated) as I do not test enough suri fleeces to get any meaningful data.

Length

The relaxed length of fiber does not interest processors as the fibers are stretched in the process of producing yarn and are held in place by closely aligning the fibers as the yarn is twisted into the final product.

The weakest point in a yarn are the fiber ends so it is important (in the production of high quality yarn) that the number of ends per unit length of yarn be the least possible, which means fleeces going into a production run of yarn should be of similar, if not identical, stretched length.

The more uniform the length in a yarn, the higher the strength and general quality of that yarn.

Classing (the sorting of fleeces into sale lines) of merino wool destined for producing yarn are first and foremost classed for length – in fact, all wool testing includes the stretched length as a recorded measurement.

It is interesting to note that crimp style has no role in the processing of fiber but the degree of crinkle in the individual fibers determines stretch – in other words, crimp is a mechanism that holds fibers together as they grow from the skin with no evidence that one crimp style is better than another as density determines how closely the fibers align in the staple or lock.

Length is important in another, perhaps more important, way – it is a major contributor to fleece weight which largely determines the value of a year's production from an individual animal.

The data shows a clear decline in length from age 5 in both huacaya and suri alpacas and that decline seems to be consistent for each subsequent year of age.

On average length declines 10.2% per year from 5 to 7 years of age (I do not record length after 84 months of age).

There does appear to be a relationship between Mean Fiber Diameter (MFD) and the degree length shortens each year with faster 'shortening' fibers increasing in micron at a more rapid rate than those losing length at a slower rate.

It is important that growers are aware that fleece weight may not change as fibers shorten simply because micron blows out so relying on fleece weight *per se* without taking into account length and micron could be a misleading way to look at productivity.

Average Daily Growth Rate

Because growers are producing fiber for sale (and presumably for premium prices) stretched length is the important measurement yet my experience is that relatively few growers assess staple length that way.

Only the US uses the imperial way of measurement in discussing length as all other alpaca fiber producing countries use metric – as does all research one might add. In choosing to record length I decided on metric measurement as the norm for two basic reasons:

1. it is easier to measure physically, and
2. it allows easier comparison between countries and reading research papers.

I found that calculating the average daily growth rate using inches as the format and dividing it by the number of days it took to grow gave me a number I simply could not relate to or imagine!

Light colored fleeces outperform darker colors (medium brown, grey and black up) on average with the following growth rates:

2021

	at 24 months of age	48months	60months
Light	.33mm/day	.31	.20
Dark	.28mm/day	.25	.18

2012

	at 24 months of age	48months	60months
Light	.30mm/day	.24	.19
Dark	.26mm/day	.20	.17

Micron

First and foremost it is important to understand that the OFDA2000 measures the whole length of the fiber whereas the test used in the US EPD program uses a 2mm (about 1/8 inch) sample of fleece. Commercially oriented buyers and processors buy and process on total length.

Fiber diameter varies over any production period as a result of climate, nutrition, stress, pregnancy, etc by as much as 4 – 5 micron in some cases it is more apparent in un-tipped cria fleeces.

Generally speaking MFD is finer in lighter colors than darker in alpacas of the same age and darker colors tend to strengthen in micron (commonly called 'blowing out') at a faster rate than lighter colors. On a histogram this shows as a faster movement of measurements to the right and flattening of the distribution curve.

	at 24 months of age	at 48 months	at 60 months
Light	21.6 μ	23.1 μ	24.2 μ
Dark	22.3 μ	23.0 μ	26.5 μ

The OFDA 2000 shows the finest fibers in a cria fleece are the primaries and secondaries produced *in utero* with micron settling at as much as 6 – 7 micron higher a month after birth – though this number varies greatly depending on the milking ability of the dam, climate, the general health of the cria, etc. It is worth remembering that density is at its highest at birth as all fibers are set in the skin and the total skin area available to those set fibers is the smallest it will ever be at birth.

It is also worth remembering that weaning can be a very stressful time for the cria and is the major reason for a tension break in the staple – this point is often highlighted by a precipitous drop in micron on the average fiber profile.

This tension break should not be confused with tenderness associated with the tip of the cria fleece.

MFD of *in utero* fiber

Light	14.3 μ
Dark	14.7 μ

Warning!

When comparing micron information between animals, especially at sales, make sure apples are being compared to apples as the 2mm (so called 'butt' test) often tests finer than the OFDA 2000 primarily because

1. the sample is taken an inch from the shearing cut which means that the test result may be directly related to different seasonal conditions depending on the time of shearing, and
2. the sample reflects a maximum of three days growth – out of a full year in most cases.

Also make sure that the tests have been conducted when the animals are of the same age.

Clients of the OFDA 2000 will note that the age of the alpaca is included in the report as is the date of the test.

Spin Fineness

This is a calculation to tell processors how this fleece will perform when spun into yarn. For alpaca growers it is of little consequence as it rarely falls outside 1 – 1.25 micron from the Mean.

Practical benefits from this data

Of particular interest in this data reveal is the lack of significant improvement in staple length over the past ten years.

As staple length is of considerable importance in increasing fleece weight it is disturbing that so little

selection pressure appears to be applied to it in breeding decision-making.

Of slightly less, but never-the-less, important is the impact of micron and decreased staple length after 5 years of age. This is not as important for breeding owners (who have breeding as a primary consideration over fleece production as animals age) but becomes a serious economic consideration for those devoted to a profitable fleece production business.

Two considerations become important:

1. is it economically risk-worthy to keep alpacas over 5 years of age in the production herd, and
2. what do I do with those that are culled because of the higher risk than average of not cutting a quality fleece that I can sell as profitably if I had replaced with a younger alpaca?

Perhaps this economic pressure to maintain profitability in a fiber-focussed business might force an extra focus on terminal market opportunities?

Nobody said alpaca farming was going to be easy!

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