Evaluating Your Fleeces For Best End Product

Not all fleeces are created equal

Objectives

- Practical How-To's - Hands on!
- Keeping it Simple – I want anyone to be able to do this and *enjoy* it!
- Understanding why these fiber qualities are critical in processing both in effectiveness and efficiency.

What follows is how we grade incoming fiber at Morning Star Fiber and evaluate it for its potential best end product. As we walk you through these nine areas you will begin to discover their influence on processing. The bottom line is that there is no amount of processing that will eliminate the need for uniformity in the raw product. Any industry (or producer on a small scale) who is serious about creating, keeping and expanding a market for their fleece products must have a rock solid plan for harvesting uniform fleece every time year after year.

1. Staple Strength

Staple Strength Scale
Brittle
Tender
Good
Great

- Processing factors…
  - –Tensile strength is the greatest factor in processing effectiveness and efficiency
    - Starting carding runs over
    - Cleaning "neps" out of carder is at least a 30 minute process.
  - –Grade 1 fleeces require a mill to work at 25% of their potential output
  - –Grade 2 fleeces – 50% of potential
  - –Grade 3 – 6 allows mills to operate at max capacity (30-50 pounds a day)
- Keeping it simple…
  - –Take a small sample of about 40 fibers
  - –Open them up so they are transparent
  - –Put them between your thumb and forefinger
  - –Hold it to your ear and gently pull
  - –Listen for the amount of "rice crispy" sounds
  - –How much weight can it bear?
- Hands on opportunity – give it a try
- Mark your job card accordingly

2. Staple Length

- Processing factors…
  - –Currently, machinery is more effective with 2" to 6.5" fibers
  - –Most effective with 2 – 3 ½" fibers
  - –Fibers under 2.5" that have little crimp have a tendency to fall out or work out

- –Longer fibers need less twists per inch
- –The Great Divide… Fibers under 3.5" behave differently than fibers longer than 3.5" in drafting

- •Keeping it simple…
  - –Measure your hand
  - –1" margin of change in length is acceptable for combining fleeces
  - –Test several (4-6) spots from the fleece to see if they are the same
  - –Measure anything that looks close to 6.5"
  - –Pay attention to the "great divide" 3.5"
- •Hands on opportunity – give it a try
- •Mark your job card accordingly

3. Staple Length Variation

- •Processing Factors
  - –A variance greater than 1.5" becomes noticeable in the finished yarn with alpaca - different in sheep's wool
  - –inability to control drafting among the varying fiber lengths
  - –Potential to set draft zone too short at the spin frame and create "tornadoes" in the singles
- •Keeping it simple…
  - –Grab seven samples from your fleeces
  - –Line them up longest to shortest
  - –What's the difference in length
  - –Don't forget to pull out the crimp when measuring
  - –Really something that should be addressed on shearing day not in skirting
- •Hands on opportunity – give it a try
- •Mark your job card accordingly

4. Resilience – ability to "bounce back" (elasticity)

- •Processing factors…
  - –Less loss in carding with crimpy fiber
  - –Holds together better in roving form
  - –"Sausage" roving (most noticeable in fiber with high variance in crimp)
  - –Changes drafting by as much as 12% in combined fleeces of varying degrees of crimp - this is a recipe for thick & thin yarn
  - –Crimpy fiber with varying staple lengths is less problematic than fibers with little crimp and varying staple lengths
  - –Little crimp = Little bloom in fulling

$$\frac{\text{Stretched measurement} - \text{Relaxed measurement}}{\text{Stretched measurement}} = \%\ \text{crimp}$$

- Keeping it simple…
  - –Unmanipulated measurement
  - –Stretched measurement
  - –Relaxed measurement
  - –Difference between stretched measurement and relaxed measurement divided by the stretched measurement
  - –Greater than 25% (ex. 3" to 4" stretched) shows a dynamic change in the fulled yarn and in processing loss
- Hands on opportunity – give it a try
- Mark your job card accordingly

5. Foreign Matter – vegetation, dung tags, mud tips, barbed wire, etc.

- Processing factors…
  - –Inaccurate weight measurement of actual fleece to be processed resulting in higher costs
  - –Damage to machinery (hoof trimmings, etc.)
  - –Decreased mill efficiency - cleaning out carding cloth
  - –Clogging the flow of fiber through small spaces in processing (ex. False twist tube)
  - –Contamination of end product (end user will have a small degree of forgiveness)
  - –High Crimp and foreign matter are not nice neighbors

Foreign Matter Scale		
X	-	Little
XX	-	Some
XXX	-	Needs skirted

- Keeping it simple…
  - –Excessive Foreign matter is a direct result of improper husbandry & harvesting practices - shouldn't have to be a skirting issue
  - –One day of work in the field could save you 6 days of work at the skirting table
  - –What degree does your eye notice the foreign matter in the fleece?
  - –To tumble or not to tumble - bird's nest!
- Hands on opportunity – give it a try
- Mark your job card accordingly

6. 2nd Cuts - "snow"

- Processing factors…
  - –Inflates the incoming weight and therefore the price to process it
  - –Many fall out in dehairing and carding creating higher processing losses and inflated processing cost due to reduced sellable units
  - –The ones that stay in create neps and pills in the roving/yarn further reducing the price point that it will sell for in the marketplace.
- Keeping it simple
  - –Don't create them in the first place

2nd Cuts Scale		
X	-	Few
XX	-	Some
XXX	-	Needs skirted

•Slower shearing speed and better "blow" accuracy with the comb
•Ability to blow them out or flick them away during shearing

–Crimpy fiber will hide them

–Proper harvesting of the fleece will allow skirter to shake the fleece free of many second cuts but never all

–Second cuts are not good clients for tumbling… many fall out, but others are simply more integrated into the fleece

- Hands on opportunity – give it a try
- Mark your job card accordingly

7. Dust

- Processing factors…
  - –Inflated incoming weight (average is 8%)
  - –Decreased air quality
  - –Contaminates machines
  - –Increased clean up time
  - –Doesn't tend to come out in the wash only in being rubbed away as the fibers are opened
  - –Takes away from luster and handle

Dust Scale
Clean
Dusty
Very Dusty

- Keeping it simple…
  - –Vacuuming or blowing out your animals at shearing day
  - –The "Pom-Pom" test - dust plume?
  - –Clean, dusty, very dusty
  - –Open up your fleeces as much as possible when skirting and sorting
  - –Tumble, tumble, tumble
- Hands on opportunity – give it a try
- Mark your job card accordingly

8. Handle

- Processing factors…
  - –Little to no impact on through put
  - –Is a uniformity issue, not micron count
  - –Bigger impact is at the consumer level

Handle Scale
Harsh
Common
Soft
Wow!

- Keeping it simple…
  - –The way it feels in the bag is a fairly accurate reality of how it will feel
  - –in the finished product if processing is done properly
  - –Good processing shows off a fleece's handle
  - –Don't downplay your ability to feel
  - –Foreign matter and dust hide a fleeces true handle
- Hands on opportunity – give it a try

- Mark your job card accordingly

9. Spin Fineness

- Processing Factors
  - Coarse or even crimpy fibers may feel hard if overly twisted into a smaller size yarn than the fibers want to be naturally.
- Keeping it simple…
  - Grab a sample of approximately 40 fibers
  - Twist until it doubles back on itself (like a 2ply yarn) and release
  - What size yarn does this fiber want to be naturally?
- Hands on opportunity – give it a try
- Mark your job card accordingly

So what's the best end product for your fleece?

- All these factors combined will help you to evaluate whether you have fleeces that are appropriate to process
- Spin fineness determines size of yarns – lower micron can make thinner yarns
- Tensile strength is critical
- Staple Length determines size of yarns based on twist per inch needed
- Crimp expands yarn options and consumer appeal
- Uniformity is critical in processing effectiveness and efficiency and large market appeal (microns, staple length and crimp)
- Dehairing can *improve* uniformity but is not the end all it's inherently a breeding issue
- What does your market want? You would be surprised at how many people never ask this question until after they have had their fiber processed
- What can your fleeces create? You would be surprised at how many people assume that you can make almost anything out of their fleece – it's just not true!
- New or ReCreated Value Added Steps
  - Cored yarns – Rug Yarn, Big Stitch
  - Continuous Woolen Rolag – "knitting knoodles"
  - Lopi

Fiber Check-in ☐				
Incoming Wt.	lb.		oz.	
Handle	Harsh	Common	Soft	Wow!
Staple Strength	Brittle	Tender	Good	Great
Staple Length/Var.				
Resilience			%	
Spin Fineness				

FM	X	XX	XXX
2nd cuts	X	XX	XXX
Dust	X	XX	XXX