North American Cashmere Goat Breed Standard

General Characteristics

The North American Cashmere Goat (NACG) is a dual purpose animal, providing both fiber and meat products. Both FIBER and CONFORMATION traits are described and scored in this breed standard, with current relative assigned values of:

- 50% FIBER
- 50% CONFORMATION

FIBER

Diameter

Fiber diameter is defined as Mean Fiber Diameter (MFD). Fiber must be fine, with a histogram MFD of 18.5 microns or less.

Style

Style is defined as the crimp or curvature of the individual fibers, and is represented on the histogram as deg/mm (degrees of circular arc per mm). Individual fibers should exhibit three dimensional, irregular crimp along their entire length. Mean style measurements on the histogram should be no less than 45 deg/mm.

Length

Fiber length is measured in its relaxed (crimpy) state, and must be no less than 1.25 inches (32 mm).

Uniformity

Fiber diameter should exhibit minimal variation in a given sample or "swatch," and transitional fibers should not be present. Uniformity is represented on the histogram as Coefficient of Variation (CV) and must be no greater than 24%.

Differentiation

Guard hair should be coarse enough to be easily differentiated from down fibers.

Total Down Weight (TDW)

The total amount of cashmere down that is obtained from the fleece of a single goat. Represented as Total Down Weight (TDW), it is measured after cleaning and processing, and must be no less than 2 ounces (60 grams).

Cover

All three harvest sites on the individual goat (neck, side, rump) should produce cashmere fiber, and the down coverage at each of these sites should be complete. The fiber on all three sites should be of consistent quality.

CONFORMATION

Head

Head should be well-proportioned to neck and body size. Horns may be of any style and shape that is functional and safe.

Teeth

Teeth should be flush with the dental pad. When viewed from the side, upper and lower biting structures should be symmetrical.

Forequarters

Neck should be well-proportioned to frame. Shoulders should be well-muscled and strong. Legs should be straight, strong, well-muscled, and proportional to frame. Shoulders, knees and pasterns should be correctly angled and strong. Forequarter movement should be free and correct.

Barrel/Back

Barrel should be long, broad, and well-muscled. Chest should be wide with ribs that are well-sprung, with adequate girth in proportion to frame. Back should be strong and straight from shoulder to rump.

Hindquarters

Rump should be broad, long, and well-muscled, with only a slight slope between hook bones and pin bones. Rear legs should be strong, well-muscled, and proportional to frame. Hips, hocks and pasterns should be correctly angled and strong. Hindquarter movement should be free and correct.

Feet

Hooves should be sturdy, broad, well-formed, and proportional to frame. Inter digital division should be adequate, and both sides of each hoof should be symmetrical.

Reproductive System

Does:

Udder should be round with good suspension, and with two teats that are functional and symmetrical. Vulva should be normally developed for age.

Bucks:

Two testicles should be present, smooth and symmetrical, and of adequate size for age. Any split in the scrotum should extend no more than one third total scrotal length. Two undeveloped teats should be present. Sheath should be normally developed for age.

Body Balance

The body should be well-proportioned overall. The front and rear quarters should be of equal height and the bone structure should be adequate to support the frame. When the goat walks, it should move smoothly and evenly.

North American Cashmere Goat Breed Standard

STANDARD RATIONALE

July 26, 2008

General Characteristics

The North American Cashmere Goat (NACG) is a dual purpose animal, providing both fiber and meat products. Both FIBER and CONFORMATION traits are described in this breed standard, with current relative assigned values of:

- 50% FIBER
- 50% CONFORMATION

FIBER

Diameter

Fiber diameter is defined as Mean Fiber Diameter (MFD). Fiber must be fine, with a histogram MFD of 18.5 microns or less. Universal trait with some differences in terminology; also listed as "Mean Fiber Diameter" and "MFD" (ECA), "Fineness" (ACGA). Diameter is probably the best term for this trait, and MFD should be the term for the way it is measured and reported on the histogram. A breed standard needs to define a maximum MFD in microns. CCMI defines cashmere diameter as "mean maximum diameter of 19 microns." Other references use a variety of measurements for maximum diameter (ACGA 18.5; NWCA 18.0; CCPA 19.5; ECA 18.5)

Style

Style is defined as the crimp or curvature of the individual fibers, and is represented on the histogram as deg/mm (degrees of circular arc per mm). Individual fibers should exhibit three-dimensional, irregular crimp along their entire length. Mean style measurements on the histogram should be no less than 45 deg/mm. Common trait (not universal) with some differences in terminology; also listed as "Style/Crimp/Curvature" (NWCA), "Style and Character" (CaPrA), and "not listed" by ACGA or CCMI. Style is measured and reported as deg/mm on the histogram, and a breed standard can define a minimum deg/mm. Objective measurement of Style (deg/mm) on the histogram is not currently available however, from all cashmere testing labs.

Length

Fiber length is measured in its relaxed (crimpy) state, and must be no less than 1.25 inches (32 mm). Universal trait in all references and terminology is also universal. Always refers to down linear measurement in the natural or "relaxed" state. ACGA uses 35mm as a minimum length standard. 1.25 inches (32mm) is used by several North American references (ECA, NWCA, CCPA)

Uniformity

Fiber diameter should exhibit minimal variation in a given sample or "swatch," and transitional fibers should not be present. Uniformity is represented on the histogram as Coefficient of Variation (CV) and must be no

greater than 24%. Universal trait in almost all references with various terminologies. Also listed as "Coefficient of Variation" (NWCA), "Coefficient of Variation around the Mean" (CCMI), and, curiously, as "Fiber Type - Cashgora" by ACGA. "Uniformity" is probably the most appropriate word for the trait (equivalent to Diameter), and "Coefficient of Variation" is the most appropriate term for the way it is measured and reported on the histogram (equivalent to MFD). A breed standard needs to define a maximum CV for "Uniformity" (CCMI, NWCA). The CCMI definition of cashmere requires a CV that "shall not exceed 24%."

Differentiation

Guard hair should be coarse enough to be easily differentiated from down fibers.
Universal trait (ACGA, ECA, and NWCA) with some minor variation in terminology (listed as "Definition" by NWCA). Refers to the important difference in fiber diameter between guard hair and down, which relates to the relative ease (or not) in separating down from guard hair in the dehairing process, which translates into fiber quality and yield from a given fleece.

Total Down Weight (TDW)

The total amount of cashmere down that is obtained from the fleece of a single goat. Represented as Total Down Weight (TDW), it is measured after cleaning and processing, and should be no less than 2 ounces (60 grams). Universally recognized as an important trait worldwide, but wide variation in terminology, much of which can be quite confusing. Also listed as "Volume" (NWCA, CCPA), "Fleece Weight" (NWCA), and described as the ultimate quantitative goal of fleece production by ACGA, but curiously omitted as an inheritable trait in the ACGA breed standard (ACGA uses the term "Density" with the explanation that it "contributes to TDW.") Again, you get only what you ask for, and if you really want TDW, you should ask for it in a breed standard (and this point is really important because TDW needs improvement in North America). Note that "Volume" is not a correct term here; the total amount of down in a given fleece is measured by weight (i.e. ounces), not by volume. And "Fleece Weight" correctly refers to the total weight of the entire harvested fleece, including guard hair, dirt, and other waste. Although "Fleece Weight" is indeed related to "TDW," it is not at all the same thing. (see FIBER NOTES for Fleece Weight x Yield = TDW).

Cover

All four harvest sites on the individual goat (neck, shoulder, side, and rump) should produce cashmere fiber, and the down coverage at each of these sites should be complete.

A universal trait throughout the cashmere industry, with minor variation in terminology. "Cover" is used by ACGA and ECA; "Coverage" is used by NWCA and CaPrA. Some variation in definitions exist, but "Cover" essentially refers to the completeness of distribution of down over the entire body of the goat. The definition of "entire body" can cause some confusion.

ECA defines "entire body" as the four "harvest sites" (neck, shoulder, side, and rump). ACGA and CCPA define three harvest sites (neck, side, and rump). NWCA essentially agrees, by excluding legs and face from the definition of "Coverage," since no valuable cashmere is harvested from these sites. So any breed standard should exclude purely "cosmetic" sites with no real cashmere value (such as face, testicles, and lower legs). In

summary, “Cover” would be the trait that refers to the complete distribution of cashmere down fiber on all four harvest sites on the goat. “Cover” is a FIBER trait that must be evaluated on the live goat.

Consistency The quality of cashmere fiber that is produced on the individual goat should be consistent between all four harvest sites (neck, shoulder, side, and rump). Another universal trait in all references, but with some minor variation in terminology. Listed as “Consistency” by NWCA and ECA (listed as a sub-heading of “Cover” by ECA), and “Evenness” by ACGA. Although terminology varies slightly, this trait always refers to the “consistency” of the quality of cashmere down on all of the harvest sites of the goat (4 ECA, 3 CCPA/ACGA), and it is generally evaluated using the traits of Diameter, Style, and Length as reference (NWCA). Similar to “Cover,” “Consistency” does not make any claims for the quality of down on purely “cosmetic” sites which have no real commercial cashmere value, such as face, testicles, and lower legs. “Consistency” is a FIBER trait that is usually evaluated on the live goat, although it can also be evaluated by doing a complete histogram on the fleece from each of the four harvest sites on any given goat.

FIBER NOTES

In addition to the terminology and definitions for heritable FIBER traits, there are also a number of other terms that are commonly used in the cashmere industry that require some definition and clarification:

1. Yield

This is a term that has been commonly used for decades throughout the cashmere industry, but it is still a term with a variety of confusing and conflicting definitions.

“Yield” is a familiar term that is universally used by processors and fleece buyers (e.g. Cashmere America, Forte, and others) to describe the amount of commercially useful down in a harvested fleece. In this context, “Yield” refers to the relative amount (% by weight) of useful down fiber that will be returned from the total raw fleece after processing (washing and dehairing). The most important determination of “Yield” is actually the relative length of down/guard hair, and that is related to the method of harvest. The “Yield” on a given shorn fleece (with “medium” down hair length relative to guard hair length) would be expected to be about 25% after processing; the “Yield” on the same fleece, if it was combed instead of shorn, would usually be 50 - 60%.

“Yield” is also sometimes used to describe the relative length of down fiber to guard hair on the live goat. So a goat with down length that is relatively long in relation to the guard hair length (“short guard hair”) is often said to have a “high yield.” This kind of assessment is meaningful only if the fleece is to be shorn for harvesting. Fleeces that are combed all have pretty much the same amount of useful down in the combed fleece (50-60%), regardless of the relative lengths of down to guard hair, because most of the guard hair remains on the goat with combing.

The most appropriate use of the term “Yield” in something like a breed standard would not be as a heritable genetic trait, but rather as the way it is used in the purchasing and processing of cashmere. It should refer only to the harvested fleece, and should describe (or estimate) the amount of useful down product after dirt, foreign material, matting, damaged fibers, and guard hair have been removed in processing. “Yield” should be

defined in % as the weight of the down fiber product when compared to the total fleece weight of the raw harvested fleece.

2. DGR (Down to Guard Hair Ratio)

As "Yield" refers to a harvested fleece by weight %, "Down to Guard Hair Ratio" (DGR) refers to fleece by length. So a goat with down length that is relatively short in relation to the guard hair (i.e. "long guard hair") would have a low DGR (e.g. .5 to 1). If the down is relatively long compared to the guard hair (i.e. "short guard hair"), the DGR would be high (e.g. 2 to 1).

Note that a goat with a low DGR ("long guard hair") can still have a fleece that is high "Yield" if the fleece was combed (most of the guard hair stays on the goat with combing). If the fleece was shorn, however, that same fleece from the same goat would have a low "Yield" simply because it was shorn (average Yield on shorn = 25%) instead of combed (average Yield on combed = 50-60%).

So it is understandable that in parts of the world where cashmere is almost always shorn (Texas, Australia), the term "Yield" can easily get used (misused) for describing the relative lengths of down and guard hair on the live goat, even though this is really comparing "apples to oranges." If all goats were to be shorn, the ones with the longest guard hair would of course have lowest "Yield" after processing, since guard hair represents most of the processing waste (by weight). And the goats with shortest guard hair would of course have relatively higher "Yield" values because there is less guard hair (waste) in the harvested fleece. So relative guard hair length does indeed relate to "Yield," but only if the fleece is to be shorn. On the other hand, if all fleeces are combed, all "Yield" values are generally relatively high (when compared to any shorn fleece), not because of down or guard hair length, but simply because most of the guard hair stays on the goat with combing.

What we are trying to do in clarifying terms and definitions in a breed standard is to clearly compare "apples to apples." If we use "Down to Guard Hair Ratio" (DGR) to describe the relative lengths of down and guard hair, we can then use "Yield" more correctly to describe the final product from the harvested fleece by weight. "Apples to apples."

Also note that most cashmere reference standards allow guard hair to be any length in a breed standard. This makes good sense, since cashmere goats can either be shorn or combed for harvesting, and there are distinct advantages and disadvantages to both long and short guard hair, and the best use of DGR is to make choices about the best method of fleece harvest. So DGR can be described on the live goat, but it really is only a breeder preference, and not a trait that should necessarily be included in a cashmere breed standard.

3. Volume

This is a term that is found in some references (NWCA and CCPA). Although the concept is indeed critically important (i.e. the total amount of useful down fiber produced by a specific goat), it is just the terminology that should be corrected. Down fiber product is measured by weight, and not by volume. The more appropriate term (essentially looking for the same thing) is "Total Down Weight" (TDW) as used by ACGA and ECA and in this breed standard.

4. Color

This term is found in all references, but its application and importance varies. CCPA and ECA accept a variety of colors, while ACGA and NWCA put a premium on white or light colors. In a breed standard, it would be best to define what the breeders actually want in "Color." If there is no "evidence-based" reason to favor one color over the other, the term/trait "Color" could certainly be defined (applied to both guard hair and down) but used to describe a breeder preference and not a heritable trait in a breed standard. On the other hand, if there really becomes a valid practical reason to prefer one color or color pattern over another, then "Color" should be included in the breed standard as a heritable trait.

5. Density

This term is used by ACGA and CaPrA, but not by ECA, NWCA, or CCPA. The description by ECA essentially refers in concept to the same thing as Total Down Weight (TDW). If TDW is included in a breed standard, there is really no reason to also include the term "Density."

6. Handle

This term is used only by ACGA. The description appears vague and non-specific, and certainly nothing that would lend itself to objective measurement. The "softness" and other characteristics of "Handle" are covered comprehensively by the other traits in this breed standard.

7. Luster

This is a term that is found in some of the earlier ECA references (Cashmere America), and currently on the CCPA web page. ACGA presents a very good description of "luster" as the result of Cashmere and Mohair crossbreeding, and then refers to the variable (and even desirable) "sheen" and "life" in the cashmere down as it grows and sheds. Luster in the cashmere down fiber was probably much more of a problem in times past in North America than it is today.

Note that even Australia (ACGA) does not include the specific term "luster" as a trait in their breed standard; instead, ACGA uses the term/trait "Fiber-Type-Cashgora" to pick up any crossbreeding problem by the identification of intermediate fibers in the histogram. In a breed standard for the North American Cashmere Goat, any remaining potential for this problem would be similarly identified under the term/trait "Uniformity" using Coefficient of Variation (CV) as an objective measurement of fiber types in the histogram, including transitional fibers.

CONFORMATION

Head

Head should be well-proportioned to neck and body size. Horns may be of any style and shape that is functional and safe. Includes Horns (from AKGA, ABGA, ACGA)

Teeth

Teeth should be flush with the dental pad. When viewed from the side, upper and lower biting structures should be symmetrical. Teeth are often included under "Head" in other standards. Given the importance of this trait, it is listed here in the NACG breed standard specifically as a heritable trait.

Frame

Large overall size is preferred in this dual-purpose animal. In other references, "Frame" is used interchangeably with "Size." Both terms refer to essentially the same thing, and both have multiple references in relevant standards (AMGA, ABGA, AKGA, and CCPA).

Forequarters

Neck should be well-proportioned to frame. Shoulders should be well-muscled and strong. Legs should be straight, strong, well-muscled, and proportional to frame. Shoulders, knees and pasterns should be correctly angled and strong. Forequarter movement should be free and correct. Meat goat standards are pretty consistent on these terms (AKGA, ABGA). ACGA uses "Chest and Shoulders." All references describe front legs under "Forequarters." Some include "Neck" with Forequarters. (AKGA). Forequarters usually includes a description of front legs. Descriptive language is similar throughout most references.

Barrel/Back

Barrel should be long, broad, and well-muscled. Chest should be wide with ribs that are well-sprung, with adequate girth in proportion to frame. Back should be strong and straight from shoulder to rump. Terms vary slightly, but all references use a combination of Back/Barrel/Body terminology, and descriptive language is similar throughout most references.

Hindquarters

Rump should be broad, long, and well-muscled, with only a slight slope between hook bones and pin bones. Rear legs should be strong, well-muscled, and proportional to frame. Hips, hocks and pasterns should be correctly angled and strong. Hindquarter movement should be free and correct. Consistent terminology throughout all meat standards. Hindquarters usually includes a description of rear legs. Descriptive language is similar throughout most references.

Feet

Hooves should be sturdy, broad, well-formed, and proportional to frame. Interdigital division should be adequate, and both sides of each hoof should be symmetrical. Very little about hooves in any other standards, other than "well-formed" and "tight." So a separate trait/heading is included in this breed standard. The CCPA heading is "Legs and Feet." Consider keeping info on Legs under "Forequarters" and "Hindquarters" as it is in all other meat standards and ACGA, and then keeping this section specifically for more detail on feet.

Reproductive System

Does: Udder should be round with good suspension, and with two teats that are functional and symmetrical. Vulva should be normally developed for age. Bucks: Two testicles should be present, smooth and symmetrical, and of adequate size for age. Any split in the scrotum should extend no more than one third total scrotal length. Two undeveloped teats should be present. Sheath should be normally developed for age.

The term "reproductive organs" is unnecessary and sometimes misapplied. Simply using the more general term "Reproductive System" allows the possibility of including characteristics such as "masculine" and

"feminine" (if that ever becomes important). And the term "Genitalia" (in ECA) is also misapplied, since an udder is not technically "genitalia."

CONFORMATION NOTES

1. The references that are used in this CONFORMATION section are those of relevant breed standards that are already established, and other relevant standards that are already published. This includes organizations such as the Australian Cashmere Growers Association (ACGA), American Kiko Goat Association (AKGA), American Boer Goat Association (ABGA), American Meat Goat Association (AMGA, and the Canadian Meat Goat Association (CMGA). No additional relevant references from Scotland or Italy are available.

2. Since CCPA, NWCA, and ECA are currently in the process of breed standard development, they are also sometimes included here as references. Some comparative notes on these developing standards might be helpful:

- The language and terminology in this proposal, as it refers to CONFORMATION traits, is very close to the specific language from both NWCA and CCPA, with most of the changes having been made to the ECA terminology for CONFORMATION. The point is to make the "meat goat" language in cashmere consistent with "meat goat" language in other meat breeds, and both CCPA and NWCA have done that.

- Although "Skin and Coat" is included in CCPA, and also in the Kiko goat standard (AKGA), "Skin and Coat" description can simply be included in FIBER traits for North American Cashmere Goats.

- "Gait" is included in the CCPA standard. This term is not found anywhere else in meat goat or other references. At the same time, a "freely moving" and "correctly moving" animal is an important consideration (and it's not just about looking pretty), and this kind of "dynamic" terminology is indeed found in some meat goat standards. In this NACG breed standard, any description regarding movement is found under "Forequarters" and "Hindquarters" (see also AMGA).

- Most of the terminology in this NACG breed standard is otherwise similar to the NWCA standard, with the addition of "Feet" and "Frame" (as they are included in both CCPA and ECA).

3. In addition to the terminology and definitions listed above, there are a number of terms that are commonly used in the cashmere industry that require some further definition and clarification.

- **Wattles** - Although the presence or absence of wattles is a heritable genetic trait, it is important only in certain specific situations. For example, the presence of wattles is important only if the goat is to be shorn (vs. combed), and even then, wattles are noted only to be avoided in shearing. This information on wattles can be noted and described, but it is not a trait in this NACG breed standard.

- **Condition** - Condition usually has more to do with the way the goat has been managed than it does with genetics and breeding choices. Any practical effect on fleece (e.g. "hunger fine") should be found in FIBER traits, and any additional practical effects on meat production should found in CONFORMATION traits. So an assessment of condition can be noted and described, but it is not a trait in this NACG breed standard.

- **Disposition** - It is unreasonable to try to define an ideal disposition in a breed standard for the North American Cashmere Goat. Disposition should ideally match the conditions under which the animal is raised. Quiet dispositions are probably best for small herds or for animals that are frequently handled. Animals raised under open range or near-feral conditions, however, generally need a disposition that is better suited to "fight or flight." And some of the emotional and behavioral problems that are seen today in working dog breeds should teach us that disposition should not be a trait that is selected primarily for the show ring. An assessment of disposition can be noted and described, but it is not a trait in this NACG breed standard.

REFERENCES

Associations:

- ABGA--American Boer Goat Association (www.abga.org)
- ACGA--Australian Cashmere Growers Association (http://acga.org.au/)
- AKGA--American Kiko Goat Association (www.kikogoats.com)
- AMGA--American Meat Goat Association (www.meatgoats.com)
- CaPrA--Cashmere Producers of America Association (www.capcas.com)
- CCMI--Cashmere & Camel Hair Manufacturers Institute (www.CCMI.com)
- CCPA--Canadian Cashmere Producers Association (www.canadiancashmere.ca)
- CMGA--Canadian Meat Goat Association (www.canadianmeatgoat.com)
- ECA--Eastern Cashmere Association (www.EasternCashmereAssociation.org)
- NWCA--Northwest Cashmere Association (www.nwcashmere.org)