UK COOPERATIVE EXTENSION SERVICE
UNIVERSITY OF KENTUCKY — COLLEGE OF AGRICULTURE

UNDERSTANDING FABRIC GRAIN

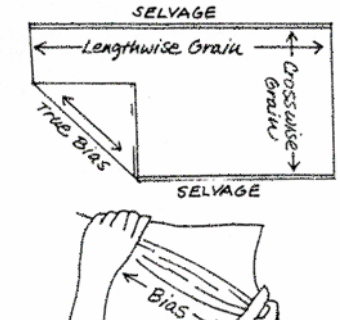
Grain is the direction of the yarns in a fabric. We describe and speak of grain in terms of "lengthwise grain," "crosswise grain," and "bias." The grain is very important when constructing garments since it determines how a garment will hang, fit and appear on you.

All fabrics that are made up of yarns have grain or direction. Technically, the term grain only refers to woven fabric; the term direction is frequently used with knit fabrics.

Woven Fabric
The **lengthwise** yarns (sometimes called the warp) run parallel to the *selvage* edge of the fabric. They are usually more tightly twisted, stronger, and more stable than the crosswise yarns.

Selvage – the firm edge along the lengthwise direction of a woven fabric.

The **crosswise** yarns (sometimes called the woof, weft, or filling) are perpendicular, or at right angles to the selvage. They are woven under and over one or more yarns to create the fabric. These yarns are usually somewhat more loosely twisted and weaker than the lengthwise yarns.



Bias is any diagonal direction on a fabric. The fabric will "give" or stretch.

True bias is the 45-degree angle or middle between the crosswise and lengthwise grain. Fold the fabric so lengthwise and crosswise yarns lie on top of and parallel to each other. This is where a woven fabric will have the greatest give.

Knit Fabric
Knit fabric is made by looping yarns together. The loops create the direction or "grain."

The **lengthwise loops** in a knit fabric create ribs (sometimes called wales). They form rows of loops and can be seen on the right side of the fabric. Usually there is less stretch in this direction. However, this may not always be true.

The **crosswise loops** are called courses. They form a row of loops that run across the fabric. Usually the greatest stretch in a knit fabric is in the crosswise direction. However, it is always important to test or check the stretch in a knit before purchasing.

Importance of Grain in Fabric
All fabrics made from yarns are "grain perfect" after knitting and weaving. Looms and knitting machines construct fabrics in a grain perfect manner. However, a fabric can become off-grain during the processes of finishing (dyeing, printing, permanent finishing, and/or packaging, winding onto a bolt). Garments that are not cut and sewn according to the fabric grain can stretch in places they should not, have sagging hems and be uncomfortable to wear. Patterns are

specifically designed with grain in mind so that the body can take advantage of the amount of stretch or lack of give in the fabric.

Learn to visually identify grain by looking and stretching the fabric. Examine the difference between *lengthwise, crosswise, selvage, bias* and *true bias*. Before purchasing a garment or fabric, look carefully at the grain line. You can train your eye to see grain in both woven and knit fabrics.

Fabrics are “on-grain” when the lengthwise and crosswise yarns *or* the courses and ribs are perpendicular to one another.

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