The "-lages" of Corn

Joe Lauer, University of Wisconsin

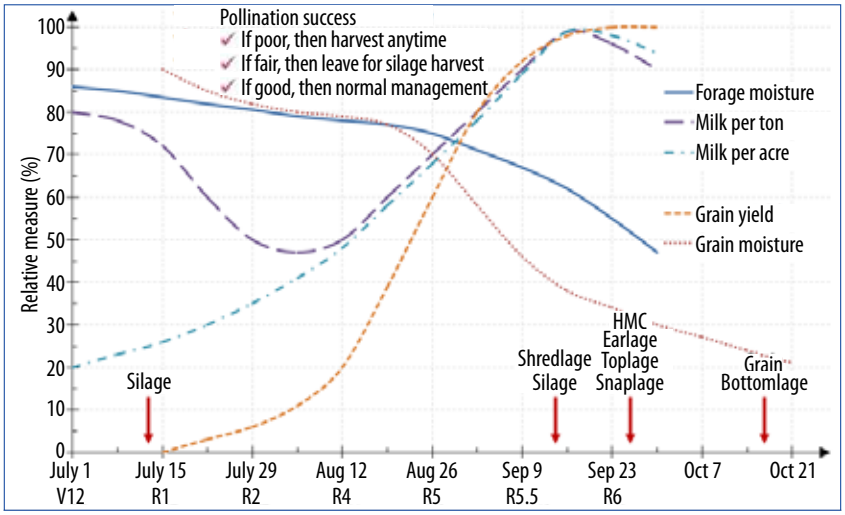
Corn is a versatile crop, especially as a forage. Good forage must have high yield, high energy (high digestibility), high intake potential (low fiber), high protein, and be at proper harvest moisture for storage. Except for high protein, corn fits this description well. It has many uses driven by yield, dry matter, and ear content. Farmers recognize its versatility and harvest corn at different times during the season. It has various names during the harvest season depending on parts harvested (i.e., green chop, silage, shredlage, snaplage, husklage, earlage, stalklage, toplage, and bottomlage). Energy content is driven by amount of grain in the forage (Table 1). Some, like stalklage, toplage, and bottomlage, have no grain and consist of only stover plant parts with lower energy (low digestibility).

Table 1. Yield and digestibility of corn plant parts (adapted from Deinum and Struik, 1989).

Tissue	% Yield	Digestibility
Leaf Blades	11	73
Leaf Sheaths	4	63
Stalk + Tassel	19	60
Cob + Husk + Shank	22	72
Kernels	44	94
Whole Plant	100	71

Corn has a "double peak" for forage quality – near flowering and near physiological maturity. Like all forages, **green chop** corn harvested near flowering can have excellent quality (Figure 1). There is little grain in the forage, but the stover can accumulate large amounts of assimilates (sugars). The major issue with green chop forage is dry matter content is too wet for long-term storage and needs to be harvested on a daily as fed basis.

Figure 1. Normal pattern of corn forage and grain development.



Silage and shredlage are similar in quality and yield and are harvested at the same time (Figure 1). They only differ in stover particle size with shredlage having longer pieces that are ripped rather than cut. These pieces are thought to be healthier for the cow rumen.

Snaplage, husklage, and earlage have different amounts of plant parts. They are all harvested at the same time (Figure 1) around physiological maturity (black layer). **Snaplage** includes ear shank, husk leaves, cob, and kernels, while **husklage** includes husk leaves, cob, and kernels, and **earlage** contains cob and kernels. Yield is greatest for snaplage, followed by husklage then earlage. However, energy content is greatest for earlage, followed by husklage then snaplage. Earlage can also be broken into high moisture ear corn (HMEC) and high moisture shelled corn (HMSC). Regardless, it is important to harvest at proper moisture for storage structures, making sure there is adequate packing to ensure fermentation.

Stalklage, toplage, and bottomlage do not contain grain. **Stalklage** contains above-ground stover plant parts and is often used as a roughage and/or bedding. The ethanol industry is looking at corn stover as an energy source. Equipment is under development that separates grain from stalklage, and can be further separated into stover above the ear (**toplage**) and below the ear (**bottomlage**). The lowest forage quality (energy) is the bottom stalk. It is the wettest part and contains high nitrates and lignin, so it is often left in the field. Leaving some residue in the field helps with soil erosion control. Also, raising and lowering the cutterbar can influence dry matter content.