

DEALING WITH THE QUALITY CARD YOU'VE BEEN DEALT

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Forage quality is increasingly important on the modern dairy farm. High interest in BMR corn silage hybrids and now reduced lignin alfalfa varieties demonstrate this need. Chasing forage quality in corn silage and alfalfa is a challenging and often frustrating activity of forage producers. Especially in the world of silage corn hybrids, seed corn companies introduce niche hybrids with unproven characteristics as the next best answer to improving silage quality on your farm. Farmers often try these hybrids, but rarely find real differences in their ability to influence animal production.

So what is going on with forage quality? Are there any proven products or management activities to increase silage quality or consistency for your cows? Like most things, the answers to these questions are complex, but we will look at the key factors influencing forage quality from the seed to the feedbunk.

One of the most important concepts to get your head around - and to always factor into your thinking - is the influence of weather and growing environment on forage quality. Weather is variable, soil is variable, and how these interact with genetics is a big deal. This seems intuitive when it comes to forage yield since it is often very visual. It is less believable when it comes to forage quality because you cannot visually see a difference in energy density or fiber digestibility. Figure 1 helps us understand the impact of growing environment on forage quality. The graph shows the performance of a single corn silage hybrid at fourteen locations in Michigan. Just like forage yield, fiber digestibility and starch have different values at each location.

The reality is that growing location and seasonal weather patterns will influence forage quality as much as three times more than any other factor, including corn genetics. In addition, every forage grower imposes their own crop and harvesting practices on the crop, which further influences forage quality. By the time a forage crop is grown, cut, processed, ensiled, and fed to a cow, the multitude of factors at play will typically prevent any reasonable understanding of how seed genetics influenced milk production.

So if weather and other factors determine forage quality of my corn silage hybrid, is there anything I can do to help drive higher quality? Yes. In fact, several crop management strategies can influence corn silage quality, starting with genetics. The single biggest impact you can have on corn silage quality and digestibility is making a choice to plant a BMR hybrid versus a non-BMR hybrid. Table 1 shows that the impact of planting a BMR hybrid is an 8-unit increase in NDFd and a 3-unit decrease in undigested-NDF (uNDF). The only other factor with as great an influence is growing environment.

Other factors such as plant population, leaf disease, high chopping, or delayed harvest can influence fiber digestibility and starch content (energy density), but have a relatively minor impact compared to the choice of BMR genetics or the influence of weather. This doesn't mean you should ignore these crop and harvest management factors. The best quality corn silage will start with a foundation of agronomically sound genetics which can handle drought better, avoid leaf disease, and contribute high starch levels to the final product. Finally, managing harvest timing, chopping height, and kernel processing will all have additional positive impacts on final silage quality. Understanding the weather card relative to your management strategies is key to making sound decisions about growing and harvesting high quality corn silage on your operation.

Figure 1. Impact of Growing Environment on Corn Silage Yield and Quality

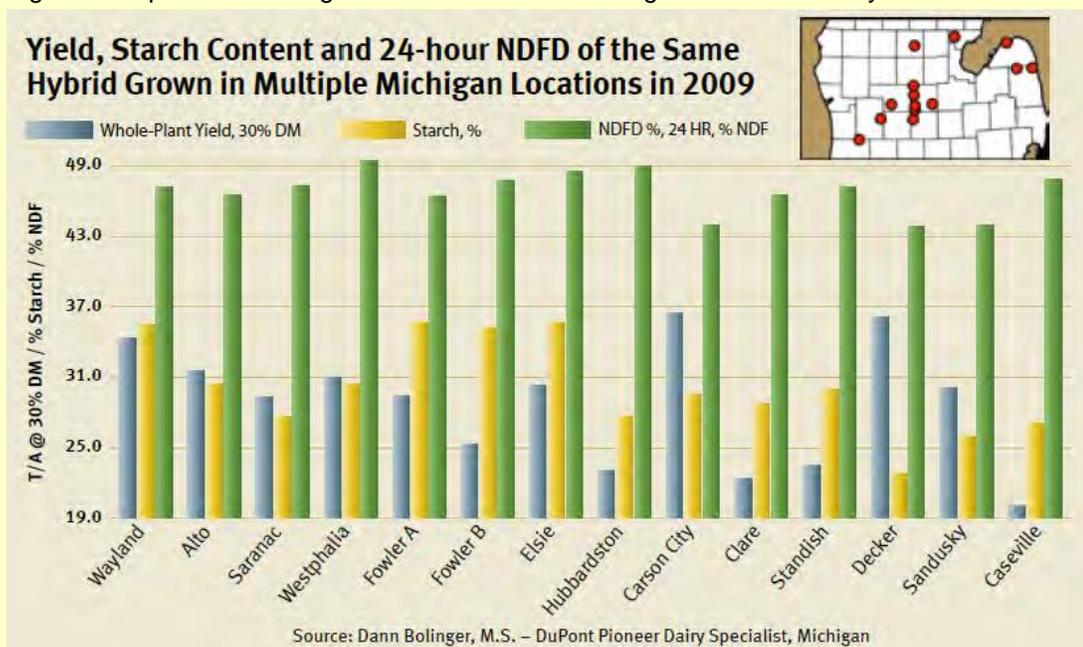


Table 1. Impact of Agronomic and Genetic Factors on Corn Silage Fiber

Agronomic Factor	Change in NDFD (% units)	Change in uNDF (% units)	Plant Parts Impacted	Impact on Lignin
Drought	+4	0	Less stalk	Unknown
BMR hybrids	+8	-3	Less grain	Less lignin
High chopping	+1	-1	Less stalk	None
Leafy hybrids	+1	-1	More leaves	None
Leaf disease	-3	+2	Fewer leaves	More lignin
Delay harvest	-1	0	Fewer leaves	None

Adapted from F. Owens, 2015 – 4-State Dairy Nutrition Conference.