Step up your seed genetics selection

John Goeser for *Progressive Dairy*

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AT A GLANCE

Seed genetic selection can allow you to make a more powerful and informed decision to increase return on investment and decrease cost per acre.

When making a several-hundred-thousand-dollar investment with a piece of machinery, we typically do our homework. You can probably share stories of test-driving self-propelled forage harvesters or tractors, prior to investing hundreds of thousands in the machine. To this point, believe it or not, a 500-cow dairy has in excess of $300,000 invested in corn silage and hay or haylage each year. Do we put the same emphasis and time in when testing out different hybrids or varieties, and management impact factors, that we do when testing out equipment? Likely not, based upon my experience the past 10 years. It's time to step up our seed genetic selection effort to make more powerful and informed hybrid and variety choices.

Make decisions based upon economics, not generic rankings

This point may sound cliché, but many farms do not fully evaluate the economic impact a hybrid or variety can have for their agribusiness, from the field through the cow. There are many reasons for this gap, including gaps in understanding crop production costs per acre, dry matter yield and total digestible nutrient value.

Crop production costs per acre

Calculating crop production costs per acre is not straightforward. If your farm does not have an itemized list of all the input costs, from tilling through harvesting costs, bring your agronomist and management team to the table to figure these out. Iowa State University provides an excellent roadmap for growers to itemize and sum up all crop inputs and costs in estimating corn silage crop production costs per acre (worksheet A1-20: www.extension.iastate.edu/agdm/crops/pdf/a1-20.pdf).

Recent crop production cost estimates for corn silage range from near $800 to over $900 per acre. This is beyond what many recognize. For example, when surveying dairy owners over the past two years, the cost estimates I've heard from groups have ranged from several hundred dollars to more realistic values of around $800 or $900 per acre. Ensure your dairy has a firm grasp on this cost to fully cover the inputs side of the seed corn partial budget.

Dry matter yield

Estimating as-fed yield is relatively simple compared with the other two major points discussed here. As harvest progresses, many farms have scales that trucks or wagons cross and weights are recorded for inventory purpose. However, sampling the trucks coming across for representative dry matter measures proves more difficult. Take at least five subsamples, using your hand as a scoop, from an unloaded truck or wagon (while practicing appropriate safety protocols) into a bucket. Then use a mixing and quartering technique to collect a roughly 1- to 2-pound sample for dry matter determination. Use an on-farm, handheld NIR instrument (there are several now on the market showing potential), microwave oven or forced air oven (i.e., food dehydrator or air fryer) to determine dry matter content on about half this sample. Work with your nutritionist on the dry matter protocol if you are not comfortable.

Progressive farms track dry matter on every load; however, if that's not achievable for your farm, consider sampling every third load. Taking only one or two samples per field is not sufficient. There is far more variability within a field than many grasp, and one or two samples will not capture this impactful variation.

Total digestible nutrient value

Another major reason seed choices and on-farm evaluating have been challenging is rooted in the fact that feed energy value indexes are outdated. Milk2006 led the industry forward 15 years ago. Milk2006 recognized that both carbohydrate content and digestibility (fiber and starch) are important to assess. However, this index is dated in that there are more advanced nutrition measures on a forage analysis, which are not taken into account via Milk2006. Nutritionists will use undigestible fiber (uNDF240) and multi-time point fiber digestion measures to assess total tract NDF digestibility (TTNDFD).

Skilled consultants will also use rumen starch digestibility measures on forages and grains to balance rumen-fermentable starch load for high-performing cows. Yet neither of these are accounted for in Milk2006. This fact poses a sizable hurdle for progressive farmers to identify top-performing genetics from their on-farm plots. Stepping back, even collecting a meaningful forage sample from a plot can prove challenging, but capturing these results and data, from varieties grown on your farm, are critical to making the right decision. Work with your seed adviser and nutritionist to nutritionally evaluate hybrids based upon the following summative approach:

Total Digestible Nutrients, % = Digestible CP + Digestible NDF + Digestible Starch + Sugar and other digestible organic matter + Total Fatty Acid

Bringing it all together

Set up a plot program on your farm with suitable replication. Your farm has hundreds of thousands of dollars invested in silage, so put adequate resources into selecting the right genetics. Don't just test a hybrid once in a field or through the lab. The growing environment heavily interacts with seed genetic potential, so skilled plot managers have two or three replications within plots. Some will argue genetics doesn't matter, or is less important, because growing conditions dictate how the silage will feed.

While the environment can't be ignored, we also need to take hold of that which we can control. Hence, I strongly disagree and recognize that the best genetics will consistently outperform average genetics within any given year. The entire set just moves one way or another with growing conditions. Also, don't assume a single forage analysis adequately represents a hybrid or field. Sampling error can be substantial as well. These two factors may seem daunting, but with a couple plot reps and samples per hybrid or variety, the average outcome (yield and quality) will empower you to make a better decision.

Don't stop with your own plot either; multiply your resources by comparing and contrasting your results with seed company and university or regional hybrid trial results. If hybrid A is top-ranking in your plot relative to hybrids B or C; however, hybrid C consistently beats hybrid A in regional and seed company trials, then C is probably worth considering. More information equates to more decision-making power; use this power to optimize your several-hundred-thousand-dollar production cost investments.

After working with your agronomist, seed adviser and nutritionist to calculate crop production costs, yield and nutritional value (needed for milk production projections), enter these data into a comparative worksheet from the University of Wisconsin – Extension. The seed corn partial budget worksheet is available here (corn.agronomy.wisc.edu/Season/DSS/CornBMRSilage_Milk_v_YieldCalculator_v22.xlsx). This worksheet highlights the entire partial budget input needs and also calculates return on investment for two different seed choices. Use this tool to your advantage and run different projections to put your dairy business in the best position to succeed via seed genetics next season.

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