

# Soil health versus farm health – there’s a difference

Dustin Sawyer for *Progressive Dairyman*

## AT A GLANCE

Would a nutritionist change ration balancing if it was known the silage crop was planted into a no-till system? Would it matter?

As of late, the term “soil health” seems unavoidable. The topic has been the center of a flurry of

activity resulting in partnerships, institutions, initiatives and networks. Confusion is added through conflicting, often nebulous, messages among these groups. If we cut through the slogans and catch-phrases, we find that soil health has a very simple concept at the core – soil is a living thing. If we feed the soil, the soil can feed the plant and the entire system will benefit. Can it be that simple? A better understanding of the history

and practices within the “soil health movement” will help to master the concept. Not unlike rebuilding the head on a tractor, soil health has a few parts involved. Knowing how they interact with each other will go a long way to knowing how to proceed.

Over the years, soil health has had many different names. You may be more familiar with it as soil quality or soil tilth. Regardless of the name, the concept has always been

to regard soil as an integral part of the ecosystem, not merely a growth medium. Ultimately, soil health is all about the ability of the soil to live, breathe and recharge so that it can sustain the use to which it was put. This is by no means a new concept. It has been around for decades, and its evolution has been driven by actual producers. More than 20 years ago, the Wisconsin Soil Health Program consulted with over 1,000 farmers in order to learn how a healthy soil is described by those who work it and live it. One result of this survey was the Wisconsin Soil Health Scorecard. This is an informative tool I remember using 13 years ago while earning my undergraduate degree.

The Wisconsin Soil Health Scorecard is an interesting approach that looks at soil as an integrated system. Questions are answered about the animals that the soil sustains, the environment surrounding the soil, the crops that the soil nourishes and the soil itself. While this approach tried to be all-encompassing, the most recent iteration of soil health has narrowed its focus.

Current assessments try to ascertain soil’s ability to retain nutrients between growing seasons, thereby sustaining the microbial ecosystem. Attention is primarily given to the time period between growing seasons, when the soil is often bare and fallow. Cover crops are used to retain nutrients within the root zone, and increased crop residue serves to protect the soil from wind and rain, decreasing erosion.

Both of these practices have the added benefit of providing a food source for the soil ecosystem. The decomposing organic matter adds structure and can improve the water-holding capacity of the soil and increase the cation exchange capacity. Because soil structure is an important aspect of soil health, conventional tillage is often replaced by a form of conservation tillage.

All of these systems work well. The idea is to return some of the natural processes that modern agriculture has removed from the soil, and it’s intuitive to see how the soil ecosystem will benefit.

Here’s the catch: By removing assessment of the animals, environment and crops (focusing only on the soil) we are forced to simply assume that implementing these methods will translate into an overall improvement of the farming system. Is that a safe assumption? The short answer is that we don’t know. We do know that there can be a “yield penalty” for planting into increased residue, due to slower soil warming, but could other penalties be assessed at feedout? Not if we use all of the tools at our disposal.



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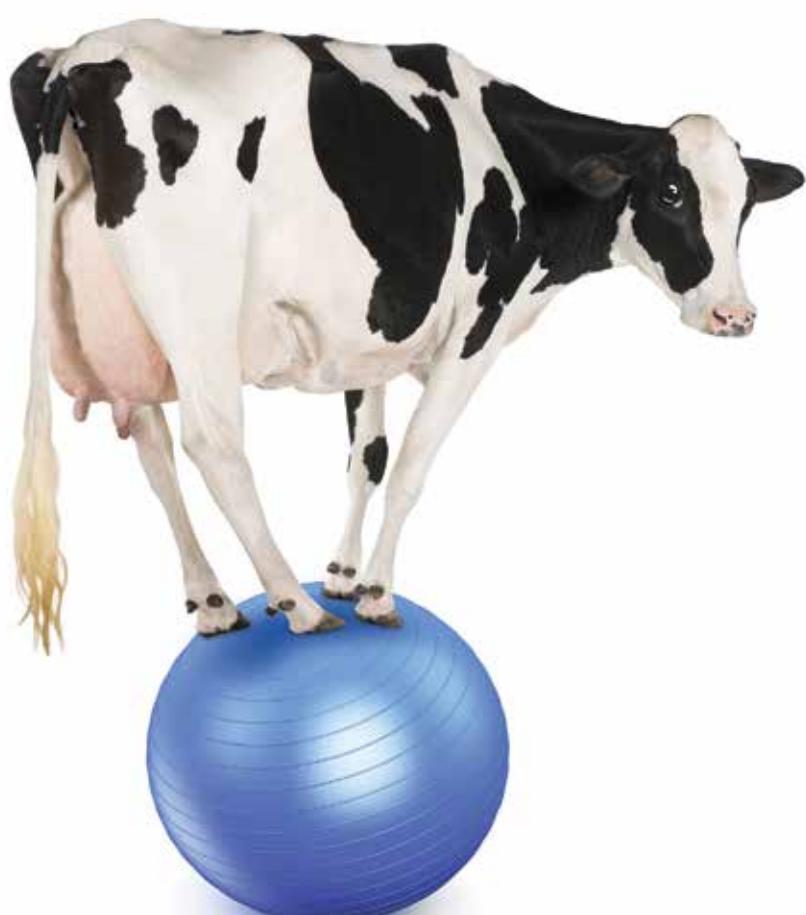


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It isn't only the beneficial microorganisms that enjoy the feast of decomposing litter and slow-warming soils. Harmful molds such as fusarium also get to enjoy this bounty. Data within our lab suggest increased occurrence of mold and mycotoxins in forages grown under increased ground cover. Just as the conservation practices offer an intuitive path to improving soil health, they offer an intuitive path to greater potential for mold contamination. Interestingly though, ration balancing focuses on the nutritional makeup of the forages and analysis of these "anti-nutrients" is relatively uncommon. Perhaps that is because there is little communication between our animal nutritionists and our agronomists. Perhaps if the nutritionist knew that a silage crop was planted into a no-till system, it would peak curiosity about contamination levels. Similarly, if the agronomist knew the forage had contamination issues, the agronomist would be inclined to re-evaluate the agronomic system.

In the end, what exactly is the goal of focusing on soil health? A healthy soil can help reduce fertilizer input costs and keep surface waters clean. These are important goals for certain, but these measures alone cannot help the farmer to be profitable and sustainable. For that reason, I am going to take a cue from the Wisconsin Soil Health Scorecard and suggest that the farming system be looked at in its entirety; let's call it "farm health." In the farm health system, the soil is an integral part but is not the end-all. The progressive farmer who is all-in on soil health should be continually assessing the entire continuum of the farm system. This includes soil health, forage health, animal health and environmental health. We have the tools, so let's use them. Unless, of course, we're happy with our assumptions. ↪



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