When it comes to soil health, Matt Rataczak doesn’t mince words.

“Lead, follow, or get out of the way,” he said. “It’s going to happen with or without you. So let’s all work together to get where we need to be with that.”

Rataczak, a District Conservationist with the Natural Resources Conservation Service, recently presented “Soil Health Goals and Costs Associated in Achieving Them” to nearly 80 people attending a soil health and cover crop forum in Manitowoc County.

Rataczak’s interest in soil health dates back to his upbringing on his family’s 50-cow dairy farm in Marquette County.

After his family sold its cows, Rataczak spent parts of the next six years working on a peppermint, spearmint, sod, corn and soybean farm prior to graduating from UW-Stevens Point. He joined the NRCS in 2002 and has been the Manitowoc-based District Conservationist since 2005.

Rataczak defines soil health as “the continued capacity of a soil to function as a vital, living ecosystem that sustains plants, animals and humans.” He added that healthy soil is composed of 45 percent minerals, 25 percent water, 25 percent air space and 5 percent organic matter.

There are four basic principles regarding soil health—keep soil covered as much as possible, disturb soil as little as possible, keep plants growing throughout the year to feed the soil, and diversify as much as possible using crop rotation and cover crops.

Integrating all four principles “is a win-win for the whole soil biology,” Rataczak said.

But, he added, “Improving your soil health is not easy. It can be a challenge.”

For agricultural professionals, the hard work that goes into healthy soil results in increased production, increased profits and natural resource protection.

Production increases because organic matter and soil organisms in healthy soil improve soil structure, aeration, water retention, drainage and nutrient availability. In addition, organic matter holds more nutrients in soil until plants need them.

Financial benefits are reaped since healthy soil requires fewer passes over fields with farm machinery, translating to reductions in labor and fuel expenses.

Natural resources also come out ahead since healthy soil’s increased water-holding capacity minimizes runoff that can cause flooding. In conjunction, that capacity increases the availability of water to plants during droughts. Groundwater also is protected because of less leaching, and fewer trips with farm machinery mean fewer emissions.

Rataczak said people need to be committed to soil health for the long run.

“Soil health is not a destination—it’s a journey,” he said. “You don’t get to soil health and stop. You aren’t ‘there.’ It’s ongoing, and management is key.”

Soil health goals can mean different things to different people. They can range from reducing soil erosion and minimizing soil compaction to suppressing weeds and promoting biological nitrogen fixation, among many other things.

“That’s one thing you’ve really got to think about — what do you want your soil health goals to be?” Rataczak said.
He emphasized that no-till farming helps achieve soil health goals.

In particular, Rataczak said no-tilling soybeans “might be the easiest crop to transition from conventional or reduced tillage to a no-till system. They seem to be a little more forgiving.” No-till wheat and/or cover crops are beneficial as well, he said. Corn is perhaps the most difficult crop with which to start no-tilling.

Ensuring every seed is at the same depth is more important in no-till than conventional farming to ensure a uniform environment for germination. He said in conventional tilling, the top 4 inches of worked-up ground typically has the same temperature and moisture; whereas in no-till the temperature and moisture can vary significantly from 1 inch to 3 inches in soil profile.

When it comes to no-till or cover crops, Rataczak said, “I get this question asked quite a bit — if I do one or the other, which one is better? Ideally, you need to do them both if you’re going to achieve the soil health principles to where you really want to be.”

But if someone insists on starting with one, he said cover crops may be better to start with.

With cover crops, it’s advised to plant as early as possible to capture maximum sunlight. In addition, Rataczak said drilling cover crops has proven to provide better stands than aerial seeding. He noted that when aerial seeding was used, harvesting corn/soybeans after Oct. 15 drastically reduces the success of the cover crop.

Perhaps most important, he said, is simply making sure the seed gets planted.

“There’s one place a cover crop will not grow, and that’s in the bag,” Rataczak said. “Planting late is better than not planting at all.”

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