

## The circle of farming: cover crops a good step toward soil health

Emporia farmer Gail Fuller's advice for ranchers and farmers seeking to improve air, water and soil quality while increasing crop yield, livestock health and financial investments is simple: take a hike.

It wasn't just a figure of speech. By walking through native grassland, along perennial creeks or through dense woodlands, Fuller said, one can see that Mother Nature abhors a vacuum, or, more specifically, a monoculture. That intensive mass of diverse vegetation aboveground and an equally diverse biomass below form an intimately interconnected web at once independent and dependent on the whole.

Farmers can do no better than to replicate nature, he said.

Fuller spoke at the 2012 Agriculture and Conservation Expo held March 12 in Horton.

Calling it 'farming in nature's image,' Fuller's approach is based on holistic principles, incorporating the extensive use of cover crops, mob livestock grazing and rapid feeding site rotation. "We have to look at everything as whole," he said. "Above ground and below ground. It's all got to come together. And no, holistic isn't a hippie word."

To farm holistically is to farm biologically, he said. It involves increasing organic matter in the soil through the use of cover crops. Benefits are almost immediate and take on a life of their own—literally.

"You start ramping up your biological life in the soil," Fuller said. "The more life in the soil, the more it consumes, so the more biomass you have to grow above the ground to feed the biomass below. It's a circle of farming."

It also necessitates a change in management style and a different way of looking at farming practices. It's no longer enough to look at short-term effects; a long-term approach is needed to ensure long-term viability. "Everything I do affects something else," he said. "We no longer look at a cropping plan as just corn and soybeans. We look at it as how this cropping plan will affect this year's crop, next year's crop, how it's going to affect the wildlife, the livestock—there are so many different things to address, and with cover crops we're addressing them all. We're recycling nutrients, we're improving water infiltration, we're feeding wildlife and livestock at the same time."

Fuller continues to experiment with various cover crops, but has at one time or another planted oats, barley, triticale, orchard grass, lupin, cosmos, safflower, mustard, rape, sunn hemp, vetch and others, usually in a cocktail mixing warm and cool season species. His mantra—"When you plant things

together, it brings the soil to life”—relies on crop diversity to not only enrich the soil but to anchor it. In many ways, he’s trying to make his crops emulate native grassland. The more biomass, the more water will soak in. Increasing organic matter in the soil from one to three percent doubles the soil’s water-holding capacity, Fuller said.

And if there’s one lesson to derive from last year’s drought, which was severe in Fuller’s area, it’s this: “The last thing to burn up in a drought is the prairie,” he said. Cover crops also reduce erosion, which was one reason he got into cover crops in the first place.

For livestock, Fuller takes another tip from Mother Nature: replicating the grazing practices of bison from pre-settlement days. At one time, 60 million bison roamed the Great Plains. The numbers were staggering; nor were they alone—cougars, elk, deer, coyotes, wolves, all accompanied the great herd. Grazing was intense followed by months of rest, giving the land time to heal. More grazing and less confinement are key ingredients to healthy pasture and healthy livestock, Fuller said.

He calls the method “mob grazing,” and like with cover crops, its practice has evolved through trial and error. Experiments showed that by moving 66 head of cattle once a day across one paddock and in tighter concentrations three times per day across another paddock, the grass in the latter was eight inches higher the following spring than in the former paddock.

“In one mob graze, we got 50 percent more production,” he said. “We increased our efficiency in the fall, we increased our production in the spring. We’re kick starting the soil life so fast there. Remember, 90 percent of what goes in a cow’s mouth comes out the other end. We’re recycling nutrients and minerals.” Some have asked about trampling. Compaction is caused by time, not pounds, he stressed, and can be easily alleviated by frequent rotations.

When taken as a whole, livestock is the last piece of the puzzle, what holds it all together, he said. There are, he admitted, alternatives. Farmers can do it as they have for generations, using herbicides and pesticides and confining cattle for winter feeding, but statistics show how that turned out.

“Is the same-old good enough?” he asked. “We’ve lost 40 percent of our topsoil and lose another five -and-a-half tons per acre annually, mostly due to bad farming practices. If we don’t change, our grandkids will have to find a way to farm rock.”

Farming holistically, the way Mother Nature intended, doesn’t take much more work or cost, he said, but it does involve a change in mindset. “It’s almost like having to relearn how to farm,” he said. “But we’re not reinventing the wheel, we’re relearning how our grandfathers and our great-grandfathers farmed.”

The Agriculture and Conservation Expo is an annual event hosted by the Delaware WRAPS and the Glacial Hills Resource Conservation and Development Region. Funding was provided in part by the EPA 319 Clean Water Act, the Kansas Department of Health and Environment, and the Brown

County and Jackson County Conservation Districts, and the Kansas Rural Center (KRC). The event featured presentations on livestock watering options by Will Boyer, KSU Watershed Specialist, and a panel of local farmers (Ed Reznicek, moderator, KRC; Dale Strickler, Jamestown; Steve Aberle, Sabetha; and Henry Hill, Holton) discussing their experiences with cover crops. The Expo also featured a dozen natural resource exhibitors.

The Delaware WRAPS works with local watershed residents and landowners to promote the implementation of water “friendly” practices like no- till and the use of cover crops in rotations and improved livestock waste management practices in the Delaware Watershed. For more information about the cover crop incentive program or watershed issues contact the Delaware River WRAPS program at 785-284-3422.