

Watching changes in 30 years of soil science

By JAMES ZIEGLER
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In his time with the U.S. Agricultural Research Service, soil and land scientist Stephen Merrill has seen many changes in farming, one of the biggest being the shift toward environmental issues.

"Agricultural research has become environmental research," said Merrill, a silver-haired man of average build.

A cozy one-story home hidden away on the west side of Bismarck has been Merrill's home since he and his wife, Janet, moved to North Dakota in 1977. He was born and raised in western New York, and the Merills lived in Southern California for 12 years before coming to Bismarck. He moved here to take a job with the agricultural research service facility southwest of Mandan.

One of the changes between Riverside, Calif., and Bismarck, he said, was the lack of air pollution.

"Certainly, the air is a lot cleaner (in North Dakota)," said Merrill. "There was only one day in the 30 years that I've lived here, where the air pollution was anything like Southern California. That was about three days after Mount St. Helens had its eruption. It threw all this dust in the air. About three days later, it looked like all these particles in the air, it looked like a typical day in Riverside."

Merrill has seen a lot of change in North Dakota's culture.

"We seem to be connected to the outside world more," he said.

Merrill also mused over the trend away from small, privately-owned businesses toward large corporations.

"For example, when we moved here in '77, there was hardly a good bookstore, then all of the sudden, two or three really good bookstores. Well now all the single, good bookstores have been replaced by one really, really, big bookstore.

Another change is in the way people talk. Merrill said the stereotypical North Dakota accent has diminished over the years.

Although he is now retired, Merrill still volunteers at the research service as a collaborator.

"I'm a species of semi-employed. I have an official position with the USDA, got a piece of paper that says I have a title of collaborator and there's a salary of zero dollars and zero cents, but I do do some real work," Merrill said.

Recently, Merrill has been working on a crop sequence calculator. Through a series of crop sequence experiments, scientists at the research service determine which crops go best together. Then Merrill and his colleagues examine the data and compile it onto a CD-ROM for farmers to use.

"We have these things called crop sequence experiments where we can understand how all these different crops interact with each other. In a diverse crop system, that's very important. Well, we're taking this information and we're putting it on a CD," Merrill said.

When Merrill moved to North Dakota, it was mostly a one crop state. Back then, wheat was the primary crop, but in the 31 years since, Merrill has watched as it has become more and more diverse.

"More recently, we've seen a tremendous change in the kinds of crops that people didn't grow in this state very much quite a few years ago or so. Soybeans and corn are main examples of that," he said.

Merrill attributes a lot of this change to stronger genetics of the crops and progressive techniques such as conservation and no-tillage planting that allow farmers to keep more moisture in the soil.

"It's a combination of factors. Better crop genetics. Better varieties that can tolerate dryness and cold better. Global climate change is a factor also. Also, I think there more adoption of what we call conservation tillage practices," Merrill said.

Since the '70s, Merrill's work has become much more environmental. Merrill talks about coupling animal and plant agriculture, which has been a major issue throughout his time with the research service.

Animal and plant decoupling refers to the trend to raise animals in one part of the country and plant crops in another. This depletes the nitrogen and water levels in the soil when they are shipped as part of the plant product to areas where they will be used as feed for animals. The depletion leads to an increased need for nitrogen-based fertilizers that can end up in runoff and contaminate water supplies. It also leads to higher concentrations of nitrogen in the areas where animals are raised.

While Merrill mainly works with soil, his work helps to contribute toward the facility's work on animal and plant crop coupling. The coupling would mean farmers raising crops for their own animals. Keeping both products together like that would mean a more balanced ecosystem.

Among the other environmental projects over Merrill's time with the agricultural research service are biofuels. The agricultural research service has been experimenting with using perennial crops such as switchgrass for ethanol, as well as corn.

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