

2019 International Legislators Forum

Biography

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Don is a retired Soil Scientist from the USDA-ARS, North Central Soil Conservation Research Laboratory, Morris, MN, and Adjunct Professor in the Soil, Water and Climate Department, University of Minnesota, St. Paul.

He holds degrees from Ohio State University and the University of Illinois. He has conducted basic research in soil and water conservation for 42 years with the recent emphasis on carbon cycling, carbon management and tillage impacts on soil carbon. His early research dealt with soil-water-plant-atmosphere relationships, with emphasis on measuring evapotranspiration, photosynthesis and plant water-status as related to soil water deficits and tillage. Later Research focused on environmental quality issues related to tillage and residue management with emphasis on soil carbon management and losses of carbon dioxide following intensive tillage. Incumbent's research used a canopy gas exchange measurement technique to evaluate short-term tillage-induced CO₂ flux from soil that has enhanced our understanding of soil carbon management. His research on short-term tillage-induced carbon losses after moldboard plowing can help explain the long-term decline in soil carbon associated with intensive cropping and that the short-term carbon loss is directly proportional to the volume of soil disturbed in the tillage operation. Research focused on carbon cycling, tillage and residue management with emphasis on tillage-induced carbon loss and carbon management in systems with biomass removal for bioenergy. The incumbent's research findings demonstrate environmental quality issues associated with tillage and residue management and have helped emphasize the importance of soil carbon management and use of conservation agriculture or no-till to minimize carbon losses in agricultural production systems. The research has attracted international attention through requests for reprints and scientific presentations at

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farmer run No Till or Direct Seed Associations around the world in Argentina, Brazil, Chile, Paraguay, Australia, New Zealand, China, Japan, Germany, Denmark, France, Spain, Kazakhstan, Uzbekistan, Russia, Finland, India and Ukraine as well as in the US and Canada. The results suggest need for improved reduced intensity tillage and diverse cropping and seeding methods for enhanced soil carbon management for soil health to improve the soil resource and maintain economic and environmental benefits important to our quality of life and food security.