

Board 66, **Carbon value maps: Using economics to encourage adoption of carbon conserving practices**, David Archer and Alan Olness, USDA-ARS

Soil organic carbon is often identified as a key indicator of soil quality providing both environmental and crop production benefits. However, because changes in organic carbon happen slowly over time and effects on crop productivity may be masked by technological change, the direct economic value of organic carbon to producers is not readily apparent. Consequently, producers may under-invest in carbon conserving practices. Although organic carbon can affect crop production in many ways, one of the more important effects occurs via changes in available water capacity. In general, available water capacity increases with increasing organic carbon, and additional available water can be beneficial for crop production even in areas where water is only occasionally limiting. However, the extent to which available water is increased by increases in organic carbon, and the crop production benefits of additional available water vary by soil type and weather conditions. Crop simulation modeling is used with Soil Survey Geographic Database (SSURGO) data to quantify the effect of increased available water capacity (via increased organic carbon) on crop yields for each soil map unit within Traverse County, Minnesota. The results are used to generate a county-wide map of organic carbon values which can be used to identify where carbon conserving practices might provide the greatest economic benefits to producers.

Archer, D. and A. Olness. 2004. Carbon value maps: Using economics to encourage adoption of carbon conserving practices. Soil Water Conserv. Soc. Abstract. [Available: http://www.swcs.org/t_chat2004confabstracts.htm]