PEOPLE AND NATURE

Working with different sorts of knowledge to increase the amount of carbon stored in our agricultural soils

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By increasing the amount of carbon in soils we can both reduce the amount of carbon in the atmosphere, so mitigating global warming, and improve soil health. There are a number of management interventions that can be used to increase soil carbon. One example is planting trees, another is re-wetting previously drained soils. Such management interventions can be labelled as 'soil carbon farming'. Soil carbon farming initiatives can be successfully applied within temperate agricultural uplands, providing the conditions are right.

Often, when conducting research to identify soil carbon farming opportunities, we rely exclusively on natural science methods to assess whether conditions are suitable. Our study illustrates that we need to understand and take account of both human and environmental conditions together if environmental management initiatives, such as soil carbon farming, are to be successful. For example, land manager willingness and their ability to engage with the initiative should be considered, alongside existing soil properties. This requires working with a variety of research methods.

Our study used a range of different methods to collect data in order to create soil carbon farming maps. This included collecting farmers' knowledge about their land, via walking interviews, and surveying soil properties. Therefore, the maps contained scientific accounts of where soil carbon is stored and where it could be increased, alongside information on how farmers understand their land, its management and their willingness to engage in soil carbon farming practices.

Analysis of these maps enabled us to better understand farmers' hopes, fears, ideas and opinions regarding soil carbon management in different parts of their farm. We learned that a number of human and environmental factors affect opportunities for soil carbon farming; for example, vegetation type is a good indication of existing carbon stores, some carbon management interventions are considered as bad farming practice, and increased soil carbon is correlated with increased incidents of livestock disease by some farmers.

We also learned that maps should be used carefully in research, as they can sometimes close-down discussion with study participants. This is because maps may be perceived as powerful representations of landscapes, which cannot be questioned or contested by study participants.

Photo credit: Anita Sedgewick, Ecosystems Knowledge Network

Plain language summary from article: Brockett, BFT, Browne, AL, Beanland, A, et al. Guiding carbon farming using interdisciplinary mixed methods mapping. *People Nat*. 2019; 1: 191– 203. https://doi.org/10.1002/pan3.24