

Can next-generation agriculture become a climate change solution — rather than a carbon generator?

Carbon farming includes a variety of agricultural methods aimed at sequestering atmospheric carbon into the soil. These farming practices can increase total carbon content, improve soil water-retention capacity and reduce fertilizer use in addition to improving plant growth.

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[Researcher Todd] Michael's team is working to uncover how genomic differences enable plants to respond better to and exploit their environment.

A key aspect of Michael's research is increasing plants' suberin production. Suberin, dubbed the biopolyester of the frontier of plants, provides some of the longest-lived molecules in the soils. In plants, suberins form gas and watertight barriers that prevent water and cellular products from leaching from roots into the soil.

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By getting plants to make bigger root systems, improved plants would create more suberin to store more CO₂. As the roots go deeper, there is less oxygen in the soil. This means there is less decomposition resulting in the CO₂ being stored longer. By making a bigger root system containing more suberin and a larger fraction of the root system buried deeper underground, plants could move a larger amount of carbon into the soil and keep it there longer.

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