

Building a Carbon Farming Monitoring Network (CFMN) at Texas A&M

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Participating TAMU Colleges

College of Agriculture and Life Sciences (COALS)
College of Engineering (COE)

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Collaborators

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Executive Summary

Carbon farming is gaining significant momentum in the U.S. and other countries as a major strategy for achieving carbon neutrality or “net zero” emissions. The current U.S. Federal Government is keen to establish a “carbon bank”, however, we lack a mechanism to document the actual emission reductions from agricultural fields implementing carbon farming practices. The dynamic processes of carbon and greenhouse gas emissions occur at finer temporal resolutions and vary spatially in highly heterogeneous agricultural landscapes. It is important to account this temporal and spatial detail for all major greenhouse gas fluxes (carbon dioxide, nitrous oxide, and methane) to properly estimate carbon offsets. The overarching goal of this **Carbon Farming Monitoring Network (CFMN)** project is to establish the necessary infrastructure to support testing and validation of emerging carbon farming technologies. CFMN is a collaborative effort involving a multi-disciplinary team of scientists from the College of Agriculture and Life Sciences (COALS) and College of Engineering (COE) with the expectation to grow our partnership with other Texas A&M colleges, research centers, universities, and USDA-ARS. The primary goals are the following: (1) **Install and operate CFMN** for monitoring long-term continuous in-field real-time greenhouse gas fluxes from large-production scale fields, (2) **Generate a CFMN database** that integrates in-field real-time greenhouse gas fluxes with a suite of management, weather, soil, plant, and remote sensing data, (3) **Develop a CFMN data access and visualization portal** for archiving, managing, and sharing data, and (4) **Share CFMN knowledge** on carbon farming practices with broader audiences including scientists, farmers, industries, policy makers and other stakeholders. The proposed CFMN will be a unique research facility at Texas A&M. The establishment of CFMN is timely and fits well with the overarching goal of several recent federal programs on developing approaches that promote transformational changes within the next 25 years to achieve net negative emissions.