USDA Building Blocks for Climate Smart Agriculture and Forestry

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What is Climate-Smart Agriculture and Forestry?

- Promotes increases in agricultural and forest productivity and farm and forest incomes;
- Builds greater resilience to climate change for forest and agricultural systems;
- Reduces and removes greenhouse gas emissions associated with agriculture, forests, and land use change; and
- Increases renewable energy production from farms and forest biomass.

Background

- U.S. Paris Commitment – 26-28% reduction in GHG emissions below 2005 levels by 2025
- USDA is well-positioned to contribute
  - One of the only departments that can both reduce GHG emissions and store carbon
  - Goal dovetails with much of the work that agencies are already doing (e.g., Soil Health Initiative, forest restoration, climate change adaptation)
- Secretary's announcement – April 2015 at Michigan State
  - Outlined the building blocks
  - Established a goal of reducing emissions by 120 MMTCO_2e per year by 2025
  - Announced early actions by industry and nonprofit partners

Principles of the USDA Building Blocks

- **Voluntary and incentive-based** – Building on existing legislation and our history of “cooperative conservation.”
- **Focused on multiple economic and environmental benefits** – Through efficiency improvements, improved yields, or reduced risks.
- **Meet the needs of producers** – By focusing on working farms, ranches, forests, and production systems.
- **Assess progress and measure success** – Through quantitative goals and objectives.
- **Cooperative and focused on building partnerships** – With industry, farm groups, and conservation organizations.

Building Blocks

- Soil Health
- Nitrogen Stewardship
- Livestock Partnerships
- Conservation of Sensitive Lands
- Grazing and Pasture Lands
- Private Forest Growth and Retention
- Stewardship of Federal Forests
- Promotion of Wood Products
- Urban Forests
- Energy Generation and Efficiency

Building Block Goals

Building Block	Goals (by 2025)
Soil Health	Promote soil conservation practices that improve soil organic matter, reduce emissions from soils and equipment, and promote healthier soils nationwide
Nitrogen Stewardship	Reduce nitrous oxide emissions and provide cost savings through application of 4 “Rs”
Livestock Partnerships	Install 500 anaerobic digesters; install impermeable covers on 10% of dairy cattle and swine operations
Conservation of Sensitive Lands	Enroll 400,000 acres of CRP with high GHG benefits; protect 40,000 acres through easements; transfer expiring CRP acres to permanent easements
Grazing and Pasture Lands	Establish grazing management plans on an additional 9 M acres, for a total of 27 M acres
Private Forest Growth and Retention	Through FLP and CFP, protect almost 1 M acres of working landscapes, and establish trees and shrubs on an additional 1 million acres through NRCS programs
Stewardship of Federal Forests	Reforest 32,000 acres per year on National Forest System lands
Promotion of Wood Products	Increase the number of building projects supported annually through technical assistance from 440 in 2015 to 900 in 2025
Urban Forests	Plant 100,000 additional trees in urban areas
Energy Generation and Efficiency	Promote renewable energy technologies and improve energy efficiency through EECLP, REAP, EQIP, and RHS programs

Soil Health

- Increase soil carbon sequestration through soil health management systems
- Key role: NRCS Soil Health Division
- Practices include: Permanent no-till, cover crops, rotations with perennial forages, etc.

Nitrogen Stewardship

- Goal: Enroll and/or maintain 64M acres under nutrient management to reduce N_2O emissions
- Challenges:
  - Weather
  - Soil Health
  - Nitrogen Application

Focus on 4Rs:

Right time, right place, right rate, right source

Livestock Partnerships

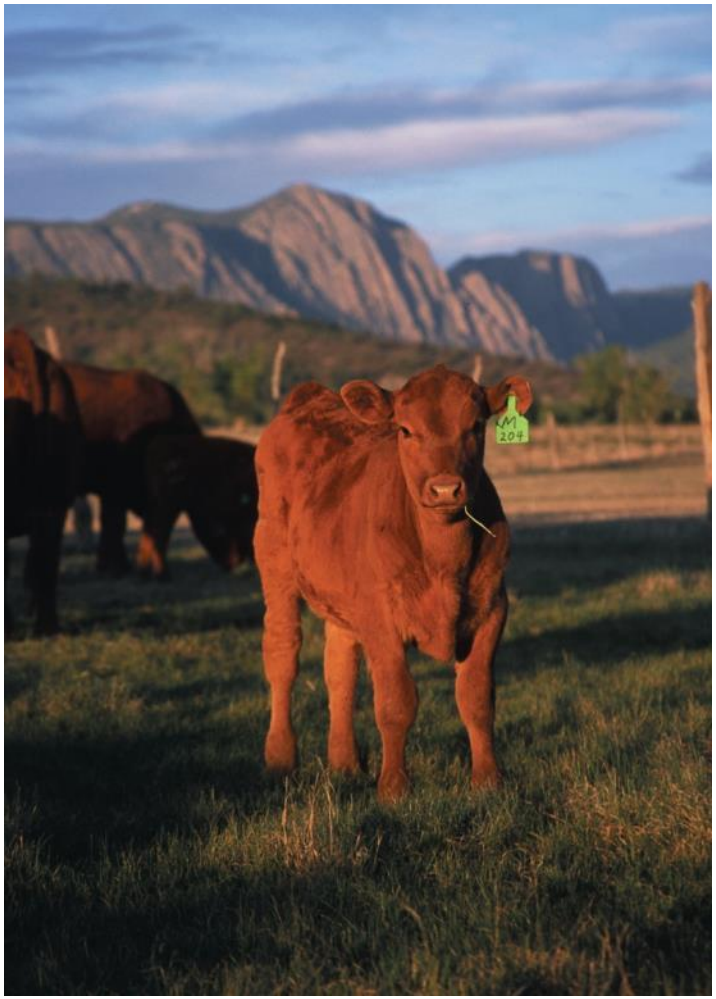
- Reducing methane emissions from livestock manure management
- Options include: anaerobic digesters, covers with flares, solid separation, and others

Conservation of Sensitive Lands

- Soil and landscapes that are valuable due to properties (e.g., high organic matter) or function (e.g., wildlife habitat, water filtration)
- Focal areas
  1. Enroll high GHG-potential lands in Conservation Reserve Program
  2. Enroll expiring CRP lands into permanent or long-term easements
  3. Enroll organic soils (histosols) into CRP or other easements
  4. Increase conservation actions through conservation compliance

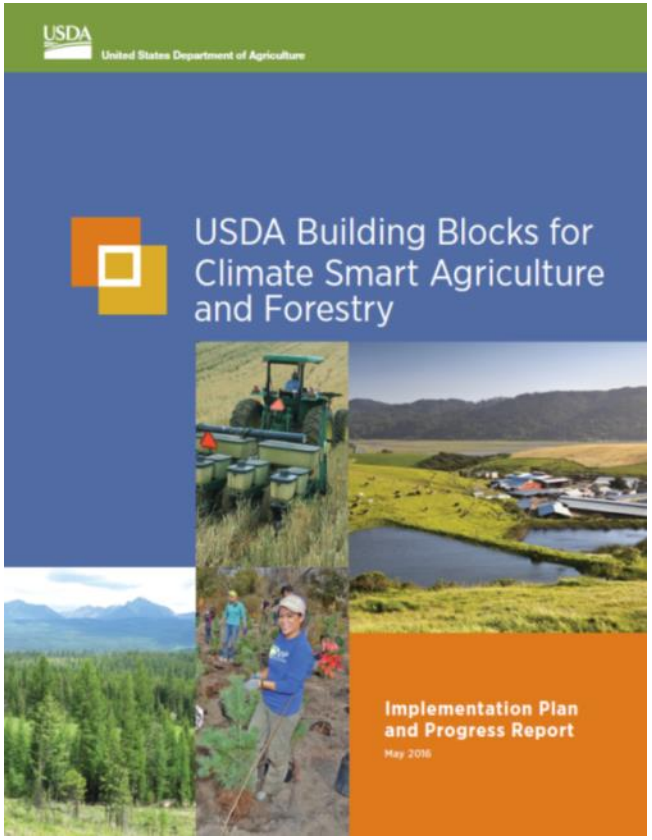
Grazing and Pasture Land

- Focus:
  - Prescribed Grazing
  - Forage and Biomass Planting
  - Range Planting
- Challenge: Carbon flux is dominated by rainfall and temperature (i.e., outside of manager's control)



Implementation Plan and Progress Report

- Released May 2016
- Outlines the goals for each building block, GHG benefits
- Reports on progress to date
- Provides implementation plans for each building block
- Summarizes next steps



http://www.usda.gov/climate-smart.html

Progress in 2016

Building Block	Notable Accomplishments
Soil Health	NRCS Soil Health Division is fully staffed. Provided training, outreach, and technical assistance to more than 27,000 individuals.
Nitrogen Stewardship	On-track to provide nutrient management plans on more than 4.5 M new acres.
Livestock Partnerships	NRCS and Rural Business-Cooperative Service supported 11 new digesters. Significant announcements from private sector.
Conservation of Sensitive Lands	Through CRP, enrollment in continuous signups increased by 118,000 acres.
Grazing and Pasture Lands	Hosted international workshop to improve soil health on range and pasture land in U.S. Field trials for organic waste application in California.

Research Needs

Implementing Building Blocks

- Pathway from research to farm-level implementation
  - Long-term framework
  - Identify promising technologies and practices
  - Coordination between public, private, and non-profit sectors
  - Ensure new technologies and practices are incorporated into USDA programs

Tracking Progress through Metrics

- Measuring the adoption of climate-smart practices, including
  - Tillage
  - Cover crops
  - Manure management technologies
  - Set-asides and easements
  - Others