A Nationally Appropriate Mitigation Action (NAMA):

Agricultural Soil Organic Carbon Sequestration in Chile

"20% by 2020"

To help reach the goal,
***Chile** has 1 NAMA implemented and 8 NAMAs under development*

Agricultural NAMA builds on existing national program of subsidies: "Recuperation of Degraded Soils"

Five subsidized practices may offer quantifiable carbon sequestration.

***Objectives** follow IPCC Tier 3 reporting standards:*

*1. Soil-, Regional- and Practice-specific **C sequestration rates***

*2. **Calibration of Century 4.0 model** for estimation of future CO_2 credits.*

Methods

Comparisons of Practices:

- Subsidized Practices vs. *Competing Anterior* Practices
- All sites are paired with neighbor for comparison.
- 15-20 pairs per practice
- Minimum 5 pairs per Soil-Climate combination
- ≥ 5 years application
- on sites with slope < 10% to avoid erosion factor

Statistics
Linear Mixed Effects Model
Based on Brazilian SOC study by Mello *et al.* (*Nature*, 2014).
Site pairing ensures balanced dataset *and* allows modeling.

Statistical Variables:
SOC, total N, extractable P, soil texture, zone, length of practice

Modeling Variables:
SOC, total N, extractable P, soil texture, extractable ammonium and nitrate, water retention curve, management history (fert, crops, soil)

Comparisons of Practices

Subsidized Practice	Comparison Practice	Geographical Zone(s)	Notes
Improved Pasture: P amendments and Clover mixes	Unimproved "Natural" Pasture	Coastal Range and South	Long-term systems without irrigation
Crop Residue Incorporation	Burning or Straw Removal, depending on Region	Central Valley	Irrigated
Zero Tillage	Natural Pasture	Andean foothills and South	Includes occasional subsoiling or shallow incorporation; unirrigated
Compost in crops, primarily vegetables	Similar crops under conventional fertilization	Central Valley sub-urban (close to markets)	Focus on organic farmers; current subsidy pays for finished product; irrigated
Stabilized poultry manure in crops	Similar crops under conventional fertilization	Currently northern coastal range	Study required on further available resources; unirrigated

Results: Possible Policy Effects

Potential NAMA Effects:

- Credit for Chile in meeting GHG reduction goals
- Assistance for Chile in development of (Tier 3) modeling program:
  I. Organizational Support
  II. Policy Revision
  III. Further research as needed
  IV. Improved soil maps/data
  V. Improved climate data
  VI. Integration with global C Seq modeling efforts

Domestic Effects:

- Transition from Burning to Incorporation
- Assistance to Smallholder Livestock
- Long-term Pasture-Crop (Zero Tillage) Rotations
- Compost in Organic Systems and Smallholder Farms

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Ministerio de Agricultura

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