

## Economic Assessment for Ecosystem Service Market Credits from Agricultural Working Lands

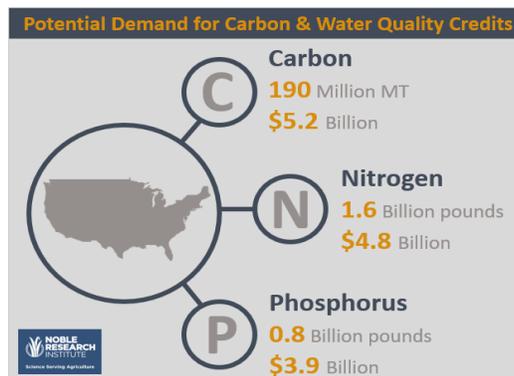
This report was produced for the Noble Research Institute (NRI). Noble Research Institute, LLC initiated, financially supported and led almost two years of activities to develop and launch the Ecosystem Services Market Consortium (ESMC). Noble continues to contribute to the ESMC through its research as well as its land stewardship and producer education programs. In February 2019, Noble initiated the transfer of its work and management of the project to the Consortium (housed under the Soil Health Institute) to advance this program.

ESMC's effort is to advance ecosystem service markets (ESM) that incentivize farmers and ranchers to improve soil health systems to the benefit of society. The intent is to enable and encourage farmers and ranchers to adopt and sustain conservation management practices to improve soil health, reduce greenhouse gas (GHG) emissions, and improve related water quality and reduce water use. Healthy soils also improve crop yield and resilience while decreasing farmers' and ranchers' need for agricultural inputs.

In support of the ESMC efforts, Informa (now IHS Markit) conducted an economic assessment to inform the total potential value of ecosystem services in terms of national and regional supply and demand that can be provided from privately owned, working agricultural lands.

- The focus on the supply side is on monetizing soil health to reward farmers and ranchers who actively adopt and improve management practices that protect the environment.
  - GHG mitigation potential is associated with changes in farm management practices for field crops, pasture/grazing land and specialty crops.
  - Supply estimates to improve water quality are based on reducing nitrogen/phosphorous runoff, which already heavily impact a great many U.S. waterways.
- The focus on the demand side is on potential buyers of ecosystem credits such as corporations, industrial or municipal operations that are interested in meeting publicly stated goals on environmental impacts, shareholder and stakeholder expectations or regulatory obligations to improve the environment.

**The study estimates potential demand for ecosystem market credits at \$13.9 billion.**



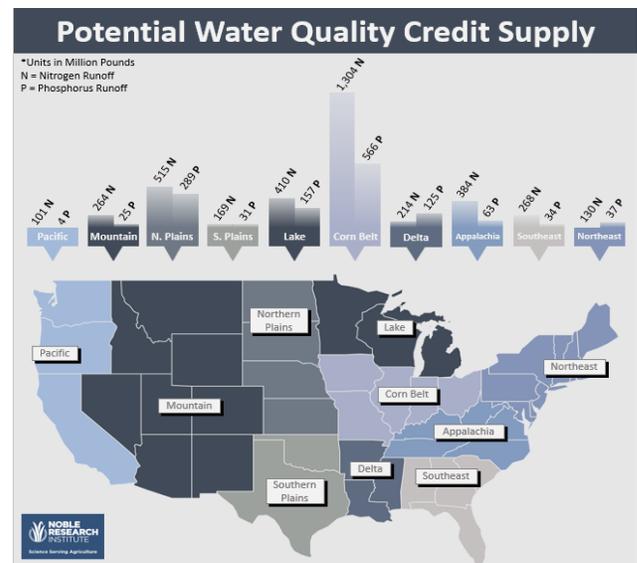
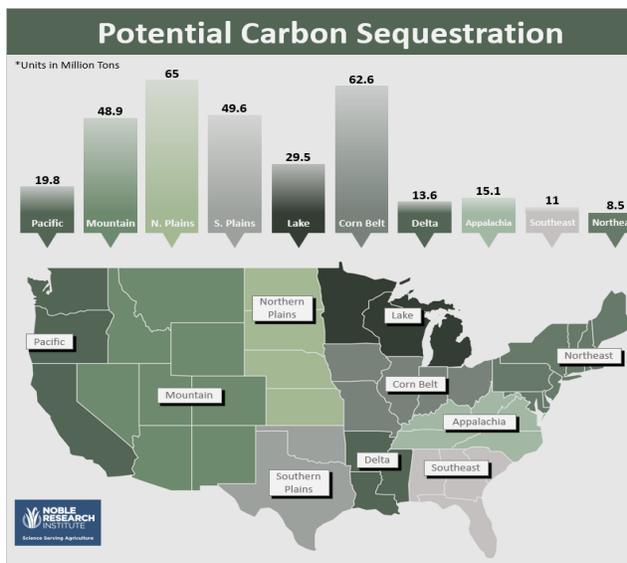
## Study recommendations:

### Carbon Credit Focus:

- Voluntary sector for demand.
  - Food and beverage companies – account for 57% of potential demand and highly involved within agriculture value chain.
- Field crops account for 60% of the total potential credit supply with the Corn Belt, Northern Plains and Lake States accounting for two-thirds of that supply.
- Pasture/range land account for 35% of the total potential credit supply with the Mountain States, Southern Plains and Northern Plains accounting for more than 60% of that supply.

### Water Quality Credit Focus:

- To succeed, a water quality credit trading program must be in the same watershed where the nutrient runoff occurs.
- Compliance reductions – Publicly owned treatment works (POTW) have the greatest potential for water quality credits because their discharges account for about 63% of total nitrogen discharges and 94% of total phosphorous discharges.



This report confirms that there is demand for ecosystem credits that is tangible and credible and not just theoretical and conceptual. The next step regarding the economic assessment is to conduct another study to evaluate the share of the potential market ESM can capture.

Protocols and protocol development for emissions and water quality trading are a significant part of the process of developing a trading-based credit system. NRI is working on developing protocols for carbon sequestration and water quality trading to accurately measure GHG reductions and improvements in water quality.

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