United States House of Representatives
Select Committee on the Climate Crisis

Hearing on October 30, 2019
"Solving the Climate Crisis: Opportunities in Agriculture"

Questions for the Record

Tina Owens
Sr. Director, Agriculture Funding & Communication
Danone North America

Dear Chair Castor and Ranking Member Graves:

Attached is our response to the follow up question from the 10/30 Select Committee Question for the Record. Please note that we have collaborated with Scientist Steven Apfelbaum via our mutual collaboration with Green America to provide the scientific basis for the responses submitted in the attached letter, and would like to note these associations in the record.

Sincerely,

Tina Owens
Sr. Director, Agriculture
Funding & Communication
Danone North America

<u>The Honorable Kathy Castor</u>

1. **If the agricultural sector currently contributes approximately 9% of total greenhouse gas emissions in the United States, how much, or under what scenarios, can agriculture potentially turn into a carbon sink and contribute to climate mitigation?**

Ecosystem carbon sampling modeled by Steven Apfelbaum/Applied Ecological Solutions demonstrates:

1. A number of scientific studies have concluded that, with its abundance of crop and pasture land, ***US agricultural land has significant potential to contribute to our overall goal of sequestering carbon.[i]***

2. With over 1.04 billion acres of cropland and pastureland, the US has the potential to sequester anywhere from 25 billion tons of carbon to 50 billion tons by 2050.[ii] The range depends on how quickly we scale and could go even higher if the rate of adoption increases for stacks of soil health practices, sometimes called regenerative agriculture. ***Thus, the U.S. can play a leadership role, by owning a significant percentage of the total drawdown goal.***

3. That soil-carbon in cropland and pastureland is durable across time and weather conditions.[iii] Meaning that ***the carbon remains in the soil once sequestration is***

achieved.

There is broad consensus regarding which best management practices (BMPs) are the most important to optimize. These practices are also central to the USDA's 5 Principles of Soil Health:

Recommendations for Prioritization

1. Prioritize soil health as the key focus in the carbon sequestration "pillar" of climate solutions.
2. Align policy and public programs to support farmers going 'all-in' for soil health, specifically the rapid transition to best management practices for soil health.
3. Support outcomes-based measurements some of which are already underway and supported by farmers, soil scientists, and supply chains. Examples of these would include the approved VERRA VM0021 and the Soil Carbon Index standard currently in its pilot stage.
4. Simultaneously support research to help speed climate and economic benefits along with implementation of a nationwide shift to 'all-in' soil health.

The Honorable Garret Graves

1. **Ms. Owens, I really appreciate you coming in today because it helps us remember what the end state of agriculture looks like after going through the supply chain. You mentioned in your testimony the need for continued U.S. leadership and innovation in climate sustainability in agriculture.**

    a. **Your company is a global one, so can you give some insight as to how important these farming practices are for your company when selecting suppliers?**

Danone North America buys directly from more than 700 American farms across the country for our most important ingredient – milk. Rather than categorizing these farms as suppliers we view them as farmer partners, and as such we work hand-in-hand to provide them with unique financial tools and opportunities to convert their practices to impact soil health.

In 2018 Danone North America launched a five-year, $6 million Soil Health Initiative to help our farmer partners to restore the ability of soil to capture carbon and overcome common obstacles to building soil health management systems. We are currently tracking over 50,000 acres with plans to expand to 100,000 acres by 2022.

While we believe this program to be impactful, we are not able to scale full adoption of these practices for the future without challenging the current systems of agriculture that reward practices from the past. This program, which targets both economic resilience and environmental impact, is a strong starting point for Congress to develop complementary policy options to incentivize and assist farmers and their partners for lasting impact at a nationwide scale.

    b. **Are developing countries like China and India prioritizing long term soil health and carbon sequestration?**

While other countries will have to do their part as well, especially countries with large tracts of agricultural cropland such as Russia, Brazil and China, the US should move quickly to get 'first mover advantage' and scale the adoption of stacks of soil health practices.

2. **Do you think showing that the farming practices we adopt here are low-cost, highly-productive, and improve long-term soil health can be a good model for other nations?**

By moving quickly we will ensure economic advantages for our farmers, rural revitalization, weather protection and resiliency and secure our domestic food production. This will, in turn, become a model for other nations.

Thank you for the opportunity to address the questions of the Committee. We will continue our work hand-in-hand with our farmer partners and welcome continued collaboration with the Committee on the significant policy and implementation potential at hand.

December 20, 2019

Dear Chair Castor and Ranking Member Graves:

Thank you again for the opportunity to present our points of view at the recent hearing "Solving the Climate Crisis: Opportunities in Agriculture" on October 30, 2019. In addition to our testimony, we are responding to the questions of the Committee regarding the size of the opportunity for carbon sequestration in soil, under what scenarios could agriculture become a 'carbon sink', where we are now relative to that opportunity and how to prioritize this opportunity given America's economic interests and environmental interests.

Simply put, the size of the opportunity is enormous. Globally, agriculture as a whole could remove at least 400 billion tons of carbon dioxide (CO2) over thirty years.[i] This is roughly the equivalent of 100 parts per million (ppm) of atmospheric carbon, which currently stands at roughly 415 ppm (NOAA).

Size of the Opportunity

Rigorous soil carbon studies clearly and conservatively document that all cropland and pastureland can increase soil carbon by at least 2% over baseline conditions under improved land management practices optimized for soil health. These practices simultaneously save farmers and ranchers money, provide flood and drought protection, reduce erosion, improve water quality for rivers, lakes, and coastal zones, and improve overall resiliency.[ii] Further ecosystem carbon sampling modeled by Steven Apfelbaum/Applied Ecological Solutions shows that soil-carbon in cropland and pastureland is durable across time and weather conditions.[iii] This means that significant carbon remains in the soil once sequestration in healthy soil is achieved through improved land management practices optimized for soil health.

A number of scientific studies have concluded that US agricultural land, with its abundance of crop and pasture land, has the greatest potential to contribute to our overall goal of sequestering carbon.[iv]

With over 1.04 billion acres of cropland and pastureland, the US has the potential to sequester anywhere from 25 billion tons of carbon to 50 billion tons by 2050.[v] The range depends on how quickly we scale and could go even higher if the rate of adoption increases with robust soil health practices optim. Thus, the U.S. can play a leadership role, by owning a signicant percentage of the total drawdown goal.

By moving quickly we will ensure economic advantages for our farmers, rural revitalization, weather protection and resiliency and secure our domestic food production.

There is increasing momentum among global food brands to secure their supply chains, to identify suppliers that have addressed their own climate risk and who align with the corporate ESG

(Environmental, Social, and Governance) targets. US farmers have the size, the skill, the technology, and the infrastrucutre to dominate an emerging climate positive commodity market.

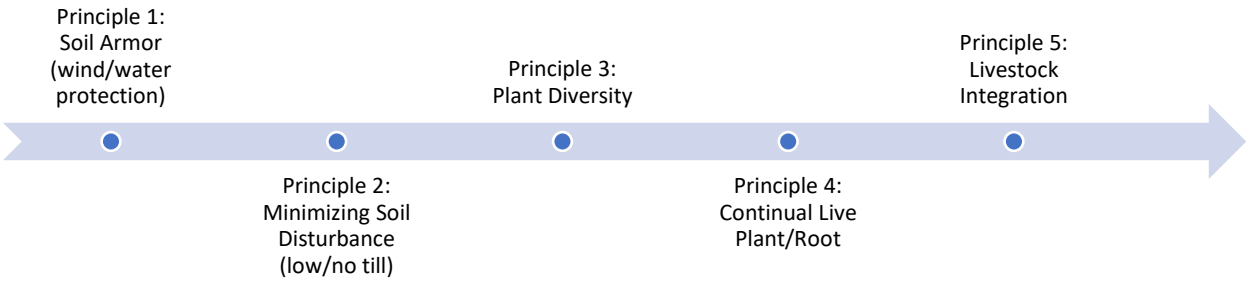
Farmer Economic Resiliency and Opportunity

Beyond scientific studies, farmers using robust soil management practices experience even greater rates of soil carbon accumulation. Case studies collected from numerous farmers and ranchers across the U.S. who go 'all -in' on soil health, achieve significant climate, environmental, farming economics and rural community results in as short as 3 – 4 years.[vi] Furthermore, farmers practicing these principles increase net profit on average by $100 - $150/acre.[vii]

With much of U.S. agricultural soils coming in at 1% or less soil carbon, recent sampling studies conducted by both scientists and companies found that among farmers practicing robust soil health practices, a stacking of best management practices for soil health, soils presented with between 3 to 6% soil carbon. (Williams, Indigo).

Which Agriculture Practices Do We Need to Encourage?

There is broad consensus regarding which best management practices (BMPs) are the most important to optimize. These practices are also central to the USDA's 5 Principles of Soil Health:



Recommendations for Prioritization

1. Prioritize soil health as the key focus in the carbon sequestration "pillar" of climate solutions.
2. Align policy and public programs to support farmers going 'all-in' for soil health, specifically the rapid transition to best management practices for soil health.
3. Support outcomes-based measurements some of which are already underway and supported by farmers, soil scientists, and supply chains. Examples of these would include the approved VERRA VM0021 and the Soil Carbon Index standard currently in its pilot stage.
4. Simultaneously support research to help speed climate and economic benefits along with implementation of a nationwide shift to 'all-in' soil health.

It is abundantly clear, based on what we already know about improved soil health managemet, we can continue to optimize for better and faster results as the research brings new data forward.

The urgency of the climate crisis calls us to get started now. The economic benefits and weather protections for our farmers and rural communities calls us to accelerate our efforts immediately.

We are honored to follow up with the Committee on the question of potential rates of carbon sequestration. We welcome any and all follow up relative to the size of the soil-carbon opportunity, the speed of scale-up, and the positive farm economic impacts.

Sincerely,

Chris Adamo
Vice President Federal
& Industry Affairs
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Alisa Gravitz
President and CEO
Green America

Steven Apfelbaum Ph.D.
Scientist, Author &
Chair Applied Ecological
Services, Inc.

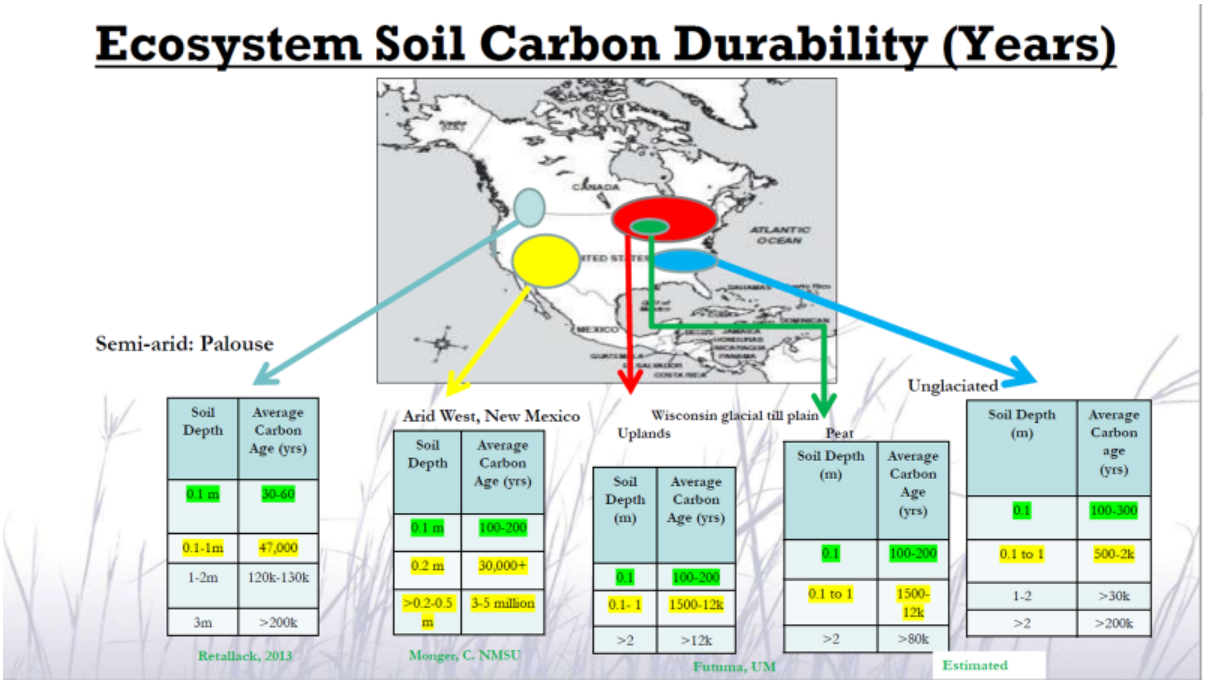
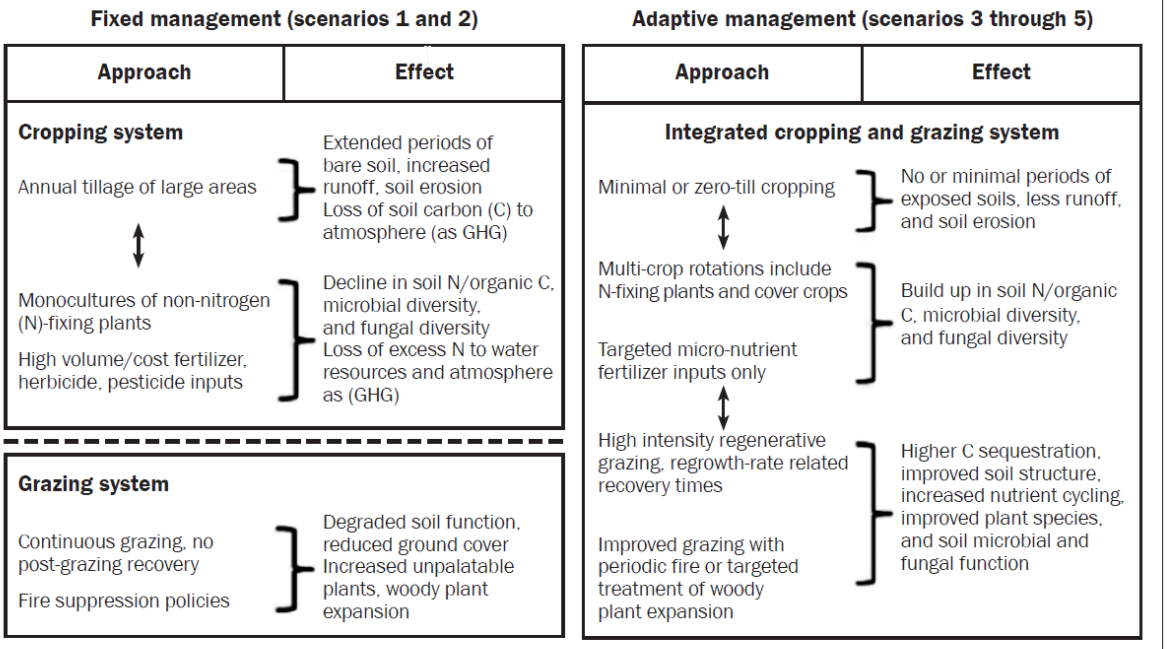


Figure 3
Comparison of current fixed and integrative-adaptive agricultural production systems.



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References Page

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[ii] Apfelbaum,Steven AMP Grazing/Low Disturbance Cropping data. Presentation

[iii] Apfelbaum, Steven, "How Durable is Soil Carbon," Presentation, Eco System Carbon Durability

[i]Lal, Rattan, " Conceptual basis of managing soil carbon: Inspired by nature and driven by science," Journal of Soil and Water Conservation 74(2):29A-34A, 2019

[ii] Apfelbaum,Steven, Teague,Richard et al, AMP Grazing Presentation, November 2019
[iii] Apfelbaum, Steven, "How Durable is Soil Carbon," Presentation, Eco System Carbon Durability

[iv] Zomer, R.J., Bossio, D.A., Sommer, R. et al. Global Sequestration Potential of Increased Organic Carbon in Cropland Soils. Sci Rep 7, 15554 (2017) doi:10.1038/s41598-017-15794-8

[v] Apfelbaum,Steven AMP Grazing/Low Disturbance Cropping data. Presentation

[vi] Case Studies on Soil Health Practices, Farmers Rick Clark (IN), Will Harris (GA), Adam Chappell (AR), compiled by Green America

[vii] Hatfield, Jerry, USDA/ARS, Soil Health Presentation Iowa City, June 2019

[viii] W.R. Teague, S. Apfelbaum, R. Lal, U.P. Kreuter, J. Rowntree, C.A. Davies, R. Conser, M. Rasmussen, J. Hatfield, T. Wang, F. Wang and P. Byck, "The role of ruminants in reducing agriculture's carbon footprint in North America," Journal of Soil and Water Conservation March/April 2016 vol. 71 no. 2 156-164