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TO: Pennsylvania Department of Environmental Protection (by ecomment)

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Full Written Comments

It is my pleasure to both endorse Pennsylvania's participation in the Regional Greenhouse Gas Initiative, and to encourage DEP and other agencies to keep in mind agriculture's unique role in mitigating the risks associated with Climate Change and for the RGGI in particular.

I am the descendent of generations of steelworkers and coal miners in Allegheny County. Today I farm with my family in rural Mifflintown, Juniata Co, on a 75-acre organic produce and livestock farm. I also lead Pasa Sustainable Agriculture, a 7,500 member Pennsylvania-based farming organization, inside of a network of close to 60,000 farmers and supporters, focusing on sustainable agriculture education, research, and apprenticeships.

Thank you for the opportunity to testify on behalf of farmers who know that ecologically-minded farming is vital to ensuring a future where we can feed people *food grown in soil*, the source of our food's nutrients. My own farm's mission is to connect people to their food, the earth, and each other and we are proud to be farming ecologically while providing good jobs for our employees, a fantastic quality of life for our family, and nutritious food for our customers.

With the recent approval by the Attorney General of Governor Wolf's executive order charging DEP to promulgate a CO2 Budget Trading Program aligned with the Regional Greenhouse Gas

Initiative, we are poised to take a significant step forward toward Pennsylvania meeting its carbon emission reduction goals by 2025 and 2050.

Pasa particularly supports the three offset categories listed in the draft Chapter 145 preliminary regulations – landfill methane reduction; tree planting, forest management and avoided forest conversion; and agricultural methane reduction. We also believe the agricultural offsets should be expanded to include additional cost-effective agricultural practices that reduce CO₂ emissions and sequester carbon.

Nationwide, agricultural production is responsible for almost 10% of total U.S. emissions (U.S. EPA. “Inventory of U.S. Greenhouse Gas Emissions and Sinks.” 2017). The recent surge in activity across states to promote and fund soil health practices is a response to soil loss and soil productivity loss, farm foreclosures, water quality, and air quality impairment, climate change, and increased frequency and damage from flooding and drought, driven by climate change.

Seven states have adopted healthy soils bills, and Pennsylvania partners are developing a program as well. Many of the practices recognized as improving soil health also reduce carbon emissions and, in some cases, sequester atmospheric carbon in soil. These practices include no-till or reduced tillage; cover crops and diversified crop rotations; rotational grazing; reduced pesticide and fertilizer use; agroforestry practices such as silvopasture, windbreaks, hedgerows and riparian forest buffers; and soil amendments like manure, compost and biochar.

Pasa and other groups are working with farmers to measure the Carbon uptake of these practices through COMET-Farm, COMET-Planner and other tools. Pasa works with more than 100 farm operations to measure soil health and water quality indicators on vegetable, row crop and grazing operations.

Farms employing healthy soils practices are seeing soil carbon levels increase from a baseline of 1-2% soil carbon to 5-8% soil carbon over a period of 10 years or more, which adds up to 25 to 60 tons of additional carbon per acre (Paul Hawken, Drawdown: The Most Comprehensive Plan Ever Proposed to Reverse Global Warming. 2017). In a recent study published by NRDC, researchers found that even a 1 percent increase in organic matter in agricultural soils over baseline resulted in an additional 20,000 gallons of rainwater retained, per acre. The implications

for flood-prone Pennsylvania are enormous. The slower release of stormwater and floodwaters from healthier agricultural soils also mitigates drought effects. Healthy soil practices like no-till require less fuel, and by reducing the need for chemical nutrient applications, healthy soils can reduce fossil fuel use and related emissions of greenhouse gases as well as reduce N₂O emissions from the use of nitrogen fertilizers

Pennsylvania has made great progress in the past 10 years, but still has a long way to go. According to the latest USDA agricultural census in 2017, PA ranked in the top 10 for the percentage of farmed acres in cover crops (13%) and the total number of farmed acres in cover crops (595,309); see <https://www.nrdc.org/experts/lara-bryant/good-news-about-cover-crops-census-agriculture>. This expansion represents a 33% increase since 2012.

While we're doing better, we need to find the will and the funding to do much better. Maryland, for example, is currently at 43% cover crops, although their overall acreage is significantly smaller. Improving soil health offers many co-benefits as well. Healthy soils improve water quality by keeping more sediment and nutrients from washing into streams and improve air quality by keeping soil from blowing away into the air. Healthy soils require fewer fertilizers, pesticides, and fungicides, which in turn lower costs of inputs that help farmers economically. Year-round cover provides better habitat for birds and wildlife, and healthier soils produce crops with higher nutrient levels.

Implementing healthy soils practices vary across geographies and soil types, but in general are not cost-prohibitive. Most costs include one-time transition costs for farmers to adopt these practices. Maryland provides farmers with a \$45/acre tax credit for planting cover crops. National estimates are in the \$30/acre range, but after the first year, lower fertilizer costs start to offset the costs of cover establishment. Riparian forest buffers in Pennsylvania cost \$4,000/acre to establish and maintain, but scaling up this work can reduce costs significantly. Studies have been showing that no-till actually saves farmers money over conventional agriculture while providing carbon benefits.

<https://www.nrdc.org/experts/claire-oconnor/farmers-reap-benefits-no-till-adoption-rises>

Many states are passing soil health legislation to incentivize farmers to adopt more practices more quickly to address climate change. Pennsylvania partners, including Pasa, are working on a soil health roadmap to outline the best way to fund and promote healthy soil practices in PA. A CO2 Budget Trading Program under the auspices of the RGGI would be an ideal and logical place to incorporate and help fund these practices.

One need only look to our neighbors to the north in New York to access a fantastic Carbon Farming report

(https://cpb-us-e1.wpmucdn.com/blogs.cornell.edu/dist/2/7553/files/2020/07/CarbonFarming_NYSAGM_FINAL_May2020.pdf). They look at reducing 3 GHGs - CO₂, N₂O, and methane, through 5 practices they run through a SMART chart and highlight actual reductions (tons CO₂ E) as well as co-benefits. These include:

1. Covering manure storage pits and flaring off methane;
2. 4-R application of nutrients to fields (right place, right time, right amount, right balance of nutrients);
3. Reduced N in livestock feed, including pasture;
4. More trees!!!
5. Use of underused lands for reforestation, solar grazing to avoid conversion of prime soils, so this practice actually INCREASES the amount of available farmland. <https://solargrazing.org/>

Some of these practices obviously need equipment and technical assistance, but it gives us a good list of activities we know work to reduce GHGs on most farms.

Finally, farmers and their finances will suffer through more volatile climate conditions, imperiling our local and global food supplies, unless more is done to combat climate change.

For starters, though, since CO₂ trading proceeds are invested in energy efficiency, renewable energy, and other consumer benefit programs, farms stand to have the co-benefit of green infrastructure that improves their bottom line. Fortunately, agriculture provides a diverse menu of options for investment like biodigesters, renewable energy deployment, soil carbon storage,

plant carbon storage (trees, hemp, etc.), fleet/equipment electrification, and building energy efficiency. Agriculture is uniquely positioned to utilize funds from RGGI to increase carbon capture, increase renewable energy, and increase efficiency.

Farms can be a larger part of the greenhouse gas solution, if given more incentives, technical support and funding. Planting more trees, buffers, and cover crops on farms will sequester more carbon in farm soils. These practices also keep soil and nutrients out of our streams, and reduce property and crop damage from flooding and drought. Farms are a great investment in carbon offsets.

Solar initiatives that do not take prime farmland out of production, such as solar grazing, provide compatibilities with pasturing sheep, chickens and other small livestock and are appropriate for apiaries. With the deployment of renewables on farms, an electric transportation system in agriculture would create built-in resilience in the supply chain and spur innovation.

All this is to say, RGGI itself may only be a first step in the direction we must head to ensure a secure food system, but it's a good option and we have to get started.

Thank you.