

Good morning. Thank you Representatives Causer and Pashinski, Senators Vogel and Schwank, members...

Since it's been a while since I've sat before some of you, my name is Hannah Smith-Brubaker and I farm with my family, just south of here in Juniata County, though our largest direct market customer base is here in Centre County. We are a certified organic produce and pastured livestock farm. We've been certified organic for 28 years, since before there was a federal program. My children, should they choose to come back to the farm after college, would be fourth generation organic farmers. Their grandfather was a very early pioneer, milling organic grains at the grist mill around which our farm was formed and through which one of the earliest canals ran, distributing product at something some might say is a more efficient small farm food distribution system than we have today!

As with many family farms, one of us works off-farm and that's me. I know many of you from my time serving as Deputy Secretary of Agriculture with Secretary Redding until, upon my request, he graciously released me from service to take on the executive director position with the Pennsylvania Association for Sustainable Agriculture (PASA). PASA is a Pennsylvania-based sustainable agriculture association working to build a more economically-just, environmentally-regenerative, and community-focused food system through education and research that directly supports farmers.

We coordinate year-round workshops and events, administer formal farming apprenticeships, and facilitate research that empowers farmers with data they value. We also work to foster productive connections between farmers, community members, local businesses, policymakers, and other stakeholders and this often means reaching out to our partners in order to better deliver on farmers' needs. Only two weeks ago PASA, Farmers Union, Pennsylvania Certified Organic and the Centre County Farm Bureau co-hosted their first event together and I look forward to more collaboration.

Through our Dairy Grazing Apprenticeship program, we are partnering with the Centre for Dairy Excellence to match apprentices with the now more than a dozen Master Dairy Graziers enrolled in our program. Many of you serve districts where these Masters graze. On the research front, we are working with the Northeast Cover Crop Council and the Rodale Institute and it's that work that I'd like to take a moment to highlight:

PASA's Soil Health Benchmark Study is a citizen-science project that began in 2016. The study helps farmers comprehensively test the health of their soils using physical, biological, and chemical soil health indicators. PASA compiles these data from individual farms to establish soil health benchmarks, which can help farmers everywhere more effectively assess whether their soil management techniques are achieving desired results.

Each farm participating in the study also serves as a case-study site for soil sampling and on-farm data collection. Participants share their management records with other farmers to build a deeper understanding of how an individual farm's approach to soil health compares to other farms in the region.

PASA also organizes research forums for farmers to collaboratively develop innovative yet practical solutions to common soil health challenges. We recently published a case study illustrating how one farm participating in the project identified a significant soil health constraint—excessive phosphorus—and worked with peer farmers to find strategies for addressing the issue.

This project is bringing together organic vegetable farmers, conventional no-till row crop farmers, and grazing dairy farmers to share data and ideas. This sort of collaboration is groundbreaking and vital. One of the exciting things we are learning so far is that soil health isn't limited to a set of prescriptive practices—different farms can develop different pathways to grow soil health. As we speak, we have more farmers wanting to enroll in our research studies than we can accommodate. We were very fortunate to enter into a partnership with the USDA Ag Research Service and to receive funding from several private foundations as well as a highly-competitive USDA NRCS Conservation Innovation Grant for this work.

More than any other industry, farming is profoundly affected by significant weather events. Fortunately, investing in soil health (for which there is already broad support) is also a great way for farmers to adapt to climate change. But, to really prepare we will need significantly more public support for agricultural research and education. Taxpayers must often foot the bill for weather damage on farms and in communities. We know that between 2011 and 2016, flood- and drought-related claims to the taxpayer-subsidized federal crop insurance program resulted in \$38.5 billion in payouts to farmers, approximately two-thirds of the total paid by the program. Since the National Oceanic and Atmospheric Administration (NOAA) projects, not necessarily dramatically higher temperatures for Pennsylvania over the next 10 years, but rather dramatic increases in flash precipitation (and, as a farmer who experienced over 15" of rain in three days recently, I can attest to this) and short-term droughts, it is imperative that we are prepared. Thank you for your support in this year's state budget for agricultural research. We urge you to continue to target agriculture research funding for climate risk mitigation strategies. Our collective future depends on it. Thank you.