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**KJWA 2(f) Socioeconomic and food security dimensions of climate change in the agricultural sector  
Farmer comments at Climate Dialogues, Koronivia workshop 2020 December 1<sup>st</sup> and 2<sup>nd</sup>**

I am Lois Wright Morton, a small-scale berry farmer from Northeast Ohio, United States representing the farmer constituency. I am also a Board member of Solutions from the Land, a farmer-led, not-for-profit that works to scale up agricultural solutions to global challenges. Thank you for the opportunity to share farmers' perspectives on agricultural vulnerability to climate change and approaches to addressing food security and nutrition. Agriculture is weather and climate dependent. Everyone who farms knows they have to pay attention to the daily weather and long-term patterns that make up the climate where each of us farm. The crops and livestock I choose to grow, the systems of production I use, the markets and prices where I sell what I produce, and whether I make a profit or lose money this year are ALL affected by climate change and my capacity to manage and adapt.

Agricultural production, rural livelihoods and economic well-being, healthy ecosystems, and food security and nutrition have complex relationships and are increasingly interdependent systems affected by changing climates locally and world-wide. In the next couple of minutes I want to share two things: 1. my own farmer experience as an example of these relationships; and 2. the recommendations of a group of North American farmers convened by Solutions from the Land on whose board I serve, who prepared and submitted them to Koronivia Joint Work on Agriculture in March 2020.

I own and manage a diversified farm of rain-fed specialty crops-primarily blueberries and red raspberries; commodity crops corn and soybean which I co-farm with my brother; and managed hardwood forestland. The soils, topography, and micro-climate of my farm, Outwash Terrace are a unique ecosystem that is the historical legacy of the Wisconsin Glacier as it receded ~ 10,000 years ago and left behind deposits of sand, gravel, silts, and clay on nearly level terraces and a river that flows into Lake Erie, one of the Great Lakes between US and Canada. The blueberry soils of my farm are naturally in the 5 ph range, perfect for acid-loving crops. My berries are sold locally via wholesale and direct markets. Berries have high nutritional value and consumer demand is strong; at local farmers markets seniors and low income pregnant and nursing mothers can sign up for fruit and vegetable

vouchers to purchase these nutritional locally grown foods. I grow nine varieties of blueberries on an acre. Untimely and extreme shifts in temperatures, rain/drought, snow-pack, early and late frosts, humidity and sunlight/cloud cover each affect berry quality and quantity. Variations in these conditions affect the kind of insect and disease pressures I need to be prepared to manage throughout each season. I never know ahead whether it will be a very wet season or a very dry season; or if a late frost during bloom will considerably reduce my crop. I grow my blueberries under high tunnel exclusion nets which are very fine mesh to prevent the spotted wing drosophila fruit fly from destroying my fruit crop. This insect can reproduce every 5-7 days in warm, moist weather during the berry growing and harvest season. This means that commercial organic and conventional berry growers in the US must monitor fruit fly arrival in the field, population insect pressure, current and predicted temperature and moisture conditions, and wind speed to make weekly decisions about pesticide use. In the four years I've used the exclusion net, I have been able to grow abundant crops of pesticide-free blueberries which I sell as "no-spray" berries. This innovation is a technology that helps me adapt to changing conditions; and bring to market high quality berries. My farm is an example of diversified and sustainable intensified cropping systems that under a changing climate can produce abundant nutritious foods, contribute to my livelihood, and is sensitive to protecting the unique ecosystem in which I farm.

I am only one farmer among many farmers and ranchers, representing the tremendous diversity of agricultural landscapes and ecosystems; and utilizing systems and practices that best support each of our farming operations. Yet we all face common challenges that the uncertainties and extreme variabilities of weather and climate change are bringing to our operations. I'd like to share with you next some of the recommendations from the North American Climate Smart Agriculture Alliance (NACSAA), a group of farmer leaders convened by Solutions from the Land over the past couple years to inspire, educate and equip farmers to use Climate Smart Agriculture (CSA) in their climate adaptation strategies. This farmer alliance has developed and submitted to the Koronivia Joint Work on Agriculture guiding principles and specific recommendations including the Socioeconomic and Food Security Dimensions of Climate Change in the Agriculture Sector aka 2(f). We think our recommendations are relevant to farmers and ranchers in developed and developing countries without regard to farm scale, production system, climate conditions, and unique landscape resources.

Our intent is that farmer voices be heard, and have the opportunity to provide significant input to national and global climate and agriculture policies. COVID-19 has underscored the fragility of local and global food systems and increased the prospect of food insecurity, hunger and poor nutrition. We identify three key social-economic outcomes that farmers are essential partners in accomplishing:

- 1) Reduce hunger and improve nutrition by supporting research and production of fruits, vegetables, animal proteins, and food-grade grains for human consumption;
- 2) Create jobs and generate quality rural livelihoods and economic growth by diversification and sustainable agricultural intensification production systems, processing, and distribution of agricultural products; and

- 3) Ensure the integrity of soil, water, forests and other ecosystems' resources as they are essential to agriculture, healthy food production, societal well-being, and a resilient earth.

To effectively move towards these goals we propose several priority processes and action steps:

1. **Develop and enable diversified and sustainable agricultural intensification production strategies** appropriate to different geographies, cultures and a wide variety of farm types and scales. These solutions can produce high quality protein, grains, and fruits and vegetables and reconnect production processes that reintegrate livestock, aquaculture, and crop agriculture as systems to better recycle nutrients.
2. **Create private activities and public policies that incentivize markets and food system distribution infrastructure.**
3. **Use evidence-based and people-centered approaches—technologies, innovations, and system approaches-** that actively and systematically involve agricultural producers; encourage and equip producers to deliver multiple solutions to food security, nutrition, rural livelihoods, and improve the quality of soil, water and ecosystem services agriculture and society need to survive and thrive.
4. **Energize and accelerate systems integration of agriculture, food and nutrition research with SDGs goals.** Farmers and the agricultural production value chain must move beyond food security goals to growing nutritious healthy foods. This will require substantial investments that incentivize multi-disciplinary integrative research encompassing food and nutritional sciences; plant and livestock genetics and production systems; and the social sciences.
5. **Transform and modernize information networks.**

Climate adaptation and farmer financial security are critical if we are to move farmers beyond subsistence livelihoods and achieve food security and nutrition for all.

Thank you for listening.

I am humbled and honored to be one of the many farmer voices that affirm the UN Sustainable Development Goals, as we seek to work together to create food systems that deliver multiple benefits: food security and improved nutrition; quality rural livelihoods; and abundant healthy soil, water, forests and ecosystems.

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