

Session Biosphere: April 11th 15.45 hrs

1S1b Models and tools for estimating circularity of alternative food and agricultural systems

Transforming to Circular Systems: Opportunities for food and agricultural systems

Goeser N 1), Jones J 2)

1) American Society of Agricultural and Biological Engineers

2) UFL/EDU

This oral presentation will feature and invite global participation in the “Transforming Food and Agriculture to Circular Systems” initiative of the American Society of Biological and Systems Engineers. This initiative is focused on collaboration across food and agricultural systems with farmers, agricultural industry, academic institutions, conservation organizations, governmental agencies and the broader public. Outcomes of this session will include prioritized actions for cross-sector work to improve farmer and rancher economics, food supply chain resilience, reduced food waste and broader circular economies.

Food and agricultural systems (FAS) provide food, feed, fiber, energy, and other products, and they are essential to society. FAS are often misunderstood as simply farming systems. In reality, FAS are much more complex because they encompass a wide range of activities and people. Activities include farm input development and delivery, farm and ranch production, agricultural processing, transport, marketing, and consumption. In the U.S., FAS constitute more than 22% of the national GDP, employ more than 28% of the national workforce, and are critical to national security.

Transforming Food and Agriculture to Circular Systems (TFACS) is a historic opportunity to meet the increasing demands for food and other products through full agricultural supply chain systems, to move toward zero waste, conserve the Earth’s natural resources, and to protect the health of ecosystems. The United States has made incredible improvements in food and agricultural systems over the past 100 years. During this time food and fiber supplies have quadrupled through innovations in genetics, precision agriculture, enhanced agricultural education and other agricultural science advances. However, there are wastes throughout agricultural supply chains that include the 30% to 50% loss of produced food that is typically dumped into landfills, along with the valuable inputs and resources that are contained in discarded food. Five grand challenges for discussion will include, 1) Sustainable supplies of food, energy, and water, 2) Curbing climate change and adapting to its impacts, 3) Designing a future without

pollution and waste, 3) Creating efficient, healthy, and resilient communities. And 4) Fostering informed decision-making and actions.

Keywords: