Global Partnerships for Global Solutions:

An Agricultural and Biological Engineering Global Initiative

American Society of Agricultural and Biological Engineers

Engineering for a Sustainable Tomorrow

ASABE, founded in 1907, is an educational and scientific organization dedicated to the advancement of engineering applicable to agricultural, food, and biological systems.

www.asabe.org

Goals and Objectives of the Agricultural and Biological Engineering Global Initiative

The American Society of Agricultural and Biological Engineers (ASABE) has a long history of providing resources to help its member engineers solve problems in food, agriculture, natural resources, and the environment. Recognizing the need to connect its members and partner societies to address emerging challenges as a global community, ASABE implemented an initiative in 2012 toward achieving its global vision: *"ASABE will be among the global leaders that provide engineering and technological solutions toward creating a sustainable world with abundant food, water, and energy, and a healthy environment."*

ASABE's 2014 Global Engagement Day focused on grand challenges that the world is facing, specifically, food security, energy security, and water security in the context of sustainability and climate change. Discussions that day resulted in goals and objectives for agricultural and biological engineers as they strive to address these grand challenges as the year 2050 approaches. The Global Engagement Day discussions and results are summarized in "Global Partnerships for Global Solutions: An Agricultural and Biological Engineering Global Initiative" published by ASABE. The complete paper is available at http://www.asabe.org/media/195967/globalinitiative.pdf.

Goal 1: Improve food productivity

1. Establish agricultural informatics and analytics to quantify food production.
2. Develop, adapt, and utilize scalable, sustainable intensification.
3. Develop sustainable urban agricultural production systems.

Goal 2. Reduce food losses and waste

1. Develop methods to quantify losses in production, processing, and distribution.
2. Develop real-time prediction and monitoring of product quality and safety.
3. Design scalable, regionally appropriate harvesting, drying, storage, processing, and handling systems to minimize loss.

Goal 3. Enhance energy conservation and efficiency

1. Establish region-specific data and analytics to quantify energy consumption.
2. Develop, design, and deploy systems for energy-efficient crop and animal production.
3. Develop, design, and deploy scalable energy systems for crop drying and storage, and for food processing.

Goal 4. Develop adaptable renewable energy systems

1. Design regionally appropriate technologies for biomass and energy crop production.
2. Develop technologies and systems for biomass feedstock supply.
3. Develop biomass and food waste conversion technologies for biofuels, biopower, biomaterials, and biochemical.

Goal 5. Improve water availability, conservation, and efficient use

1. Develop affordable sensing technologies for water quality and quantity measurements.
2. Improve irrigation technologies and management to optimize water use efficiency.
3. Develop water reuse systems.

Goal 6. Provide clean water for multiple uses (human consumption, agriculture, recreation, ecosystem services, biodiversity, etc.)

1. Develop scalable, regionally appropriate, cost-effective drinking water treatment tools and systems.
2. Minimize the environmental impact of water use.
3. Develop regionally appropriate stream and wetland restoration and water pollution mitigation practices and technologies.

Complete paper:

"What kind of world will our grandchildren experience, and what is the role of agricultural and biological engineers in shaping that world?"

Robert A. Easter, President, University of Illinois

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SPRING 2015