



Proposal Format and Background Information for CAST Publications

Criteria for CAST Consideration

1. The topic should be of broad national concern, and there should be a compelling need for the information. Topics on which legislative or regulatory decisions are pending, are likely to be made in the near future, or are perceived as being seriously needed should be given highest priority. Regional and state issues may be considered if they have evident potential for national concern.
2. The topic should benefit from a multidisciplinary approach and should relate to one or more of the scientific disciplines represented in CAST member societies. CAST does not normally address topics that fall within the boundaries of a single member society or organization.
3. For topics dealing with products, the perspective should be broad (e.g., explaining the impacts of agricultural mechanization rather than building a case for public funding of research on agricultural mechanization).

All proposals must include the following information

(Use additional sheets as necessary)

Proposal Tracking Code: _____ (to be assigned by CAST office)

1. **Title:** The Science of Sustainability: measuring and documenting the sustainability of food and agricultural systems.
Submitted by: Field to Market, The Alliance for Sustainable Agriculture
Date Submitted: TBD
2. **Type of Project:** CAST Commentary (4-8 printed pages).
3. **Justification and Potential Impact.** Provide a narrative justification or rationale for the report. This section should provide a general overview for the report as well as specific justification for addressing the issue. Indicate pending or future legislation, policy changes, or regulations that might be enacted that relate to the issues of the proposed report.

Consumers are demonstrating a heightened interest in their food origins as well as details on its sourcing, production and processing. While the United States' public desires a safe and inexpensive food supply, a trend has emerged that places consumer value on sustainable food systems. Food and agricultural companies are challenged to react, address consumer concerns and identify added value.

Most definitions of sustainable food production systems include meeting current needs while allowing future generations to do the same based on the three pillars of sustainability: economic, social and environmental. Modern consumers, bombarded by diverse news, social media and sometimes false statement about food systems, desire assurances that their food is produced in ways consistent with their values and expectations.

Increasingly, consumer values are being drawn towards animal welfare and rearing practices and agricultural impacts on water quality, soil health, and the environment. Value is also placed on the social impacts of food production systems including worker safety, fair compensation, and supporting communities in food-producing areas. Scientific evidence shows that the US food system is safer and more efficient than other parts of the world, and sophisticated consumers continue to seek documentation and proof that their food is sustainably produced. Many companies in the food and agricultural sectors have reacted to consumer demand through public pledges and timelines to track improvements in sustainability within their value chain.

Increasingly, companies are working directly with farmers, agricultural advisors and NGOs in a cooperative, pre-competitive manner to devise commonly acceptable definitions and methods to measure sustainability. A common approach to sustainability that has emerged from this supply chain work focuses on achieving continuous improvement in agricultural production.

This paper will provide an overview of the best available science and the knowledge gaps still to be filled to support benchmarking methods and tools that have been developed to measure and document the sustainability of meat, dairy, commodity crop production and specialty/fresh market crops to meet consumer demands for information and assurance. These benchmarking tools also inform and empower stakeholders, brand managers, and other decision-makers in the food value chain to help them understand the tradeoffs among environmental, economic, and social aspects in order to make informed decisions.

4. **Objectives and Key Issues to be Addressed.** A clear and complete statement of the specific issues that should be considered in the report.

This report will introduce a number of sustainability benchmarking tools used across the industry to document the environmental sustainability of current production practices and track progress toward long term continuous improvement of the environmental outcomes from agricultural systems. The focus on environmental outcomes is intended to limit the scope of the CAST report to the area of greatest commonality of the programs. While some tools include specific socio-economic indicators (e.g. labor indicators for specialty crops, or animal welfare indicators for dairy) we propose the paper focus on the environmental outcomes which are common across the multi-stakeholder sustainability program space. These will include tools developed with the direct engagement and involvement of agricultural producers, and focused on assessing the environmental outcomes of agricultural production practices. Specifically, the tools in use for commodity crops (Field to Market Fieldprint Calculator), dairy production (Innovation Center for US Dairy FarmSmart Platform), specialty crops (Stewardship Index for Specialty Crops Metrics) and tools under development for meat production (e.g. US Roundtable for Sustainable Beef) will be included.

The report will include an overview of the science-based metrics developed for the sustainability assessment tools, and it will address their potential to provide regional and sector-specific summary results to document effect of changes in production. However, it will also strive to identify current knowledge gaps and determine areas where scientific advances would contribute to advancing evaluation and implementation of continuous improvement strategies by agricultural producers. Opportunities for continued adoption of these sustainability assessment tools should be explored.

Intended Audiences and Potentially Impacted Stakeholders for the Report. Indicate the concerned groups to whom the report should be addressed. Indicate whether the audience is primarily state, regional, or national and if the group is legislative, policymaking, or regulatory. In addition, provide a list of affected stakeholders, to whom the publication would be of particular interest, from a marketing viewpoint.

This paper will serve as a resource to many audiences and stakeholders. From a policy standpoint, identified knowledge gaps to advance evaluation and implementation of continuous improvement strategies by agriculture will be beneficial to upcoming 2018 Farm Bill considerations within the research agenda. Similarly, identified gaps will be beneficial to Foundations and other research supporting entities as they advance sustainability agendas. From a food and agricultural stakeholder perspective (food companies, agricultural and livestock producers, processors, suppliers, distributors, consumers, researchers/academia, technology vendors, contractors and consultants), the report will serve as a useful reference to understand the scope and scale of sustainability assessments. This publication also has potential to act as a catalyst for the development of next generation of innovative sustainability ideas and user-friendly assessment tools (from the academic and private sector).

5. **Disciplines or Fields Affected by the Topic Being Addressed.** List disciplines that can contribute to the report and indicate those that would be impacted by, or have an interest in, the report.

Agricultural and Biosystems Engineering
 Agronomy
 Animal science
 Biogeosciences
 Biotechnology
 Dairy Science
 Environment science
 Extension services
 Hydrology and Watershed modelling
 Policy science
 Soil Science
 Social science

6. **Selected Background Information.** Include carefully selected pertinent existing literature. Reference to material that is similar in scope to the proposed publication would be helpful.

Web sites:

www.fielddtomarket.org/report
www.usdairy.com
www.usrsb.org
<http://www.stewardshipindex.org/>

Journal Articles

DeLonge, M.S., A. Miles, L. Carlisle. 2016. Investing in the transition to sustainable agriculture. *Environmental Science & Policy*, 55(1): 266-273. DOI: 10.1016/j.envsci.2015.09.013

MacFayden, S., et al., 2015. The role of food retailers in improving resilience in global food supply. *Global Food Security*, 7: 1-8. DOI: 10.1016/j.gfs.2016.01.001

7. **Key Resource Personnel.** Include names and contact information of persons who are knowledgeable and well qualified to address this topic as an author or reviewer; also include the area of expertise of each person. Consider U.S. and international experts.

Jehangir H. Bhadha (Soil and Water Science), Everglades Research & Education Center, UFL
 Johannes Lehman (Biogeochemistry), Cornell University
 Peter Woodbury (Modelling of sustainable agricultural and forest ecosystems), Cornell
 David Clay (Agronomy), South Dakota State University
 Chris Daly (GIS Modeler), Oregon State University
 Pius M Ndegwa (Biological Systems Engineering), Washington State University

Victor E. Cabrera (Dairy Management), University of Wisconsin
Marty Matlock (Life Cycle Assessment), U of Arkansas
Ed Barnes (Agricultural Engineering), Cotton Inc.
Patricio Grassini (Agronomy), Univ of Nebraska
Tristram West (Carbon Cycling in Agricultural Systems), US Department of Energy
Marlen Eve (Agronomy and Greenhouse Gas Emissions), US Department of Agriculture
Chris van Kessel (Agronomy), UC Davis
Cameron Pittlekow (Sustainable Intensification), U of Illinois
Cliff Snyder (Nutrient Management Science), International Plant Nutrition Institute
Charles Rice (Soil Science), Kansas State University
Bruno Basso (Agronomy and Crop Modeling), Michigan State University
Linda Prokopy (Social Sciences), Purdue University

8. **Suggested Sources of Funding.** Provide suggested sources of funding, including specific contact information of responsible parties, for each publication being proposed.
Similar to the Honey Bee Health Coalition who submitted a paper proposal to CAST, we anticipate a “pass the hat” approach, to set a maximum allowable contribution and solicit contributions from among member organizations of the identified sustainability programs.
9. **Possible Venues for Launch of Publication.** Suggest names and dates of possible meetings or other venues for public release of the document.
Sustainable Agriculture Summit – November 14-16, 2017
ASA-CSSA-SSSA Annual Meetings – October 22-25, 2017
National Cover Crops Conference (SWCS) – November 7-9, 2017

Submit completed proposals to:

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Ames, Iowa 50014

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E-mail: kschescke@cast-science.org

For CAST Office Use Only: PROPOSAL ACTIONS

CAST Work Group Oversight

_____ Animal Ag & Environmental Sciences

_____ Food Science & Safety

_____ Plant Ag & Environmental Sciences

Work Group Liaison: To be determined if the proposal is approved. **Is this a revision of an earlier proposal? Yes** _____ **No** _____

Date approved by Work Group: _____

Date forwarded to CAST Office: _____

Date considered by Board of Trustees: _____

Trustees' recommendation: Approve _____ **Reject** _____ **Revise proposal** _____

Date considered by Board of Directors _____

Board of Directors' action: Approve _____ **Reject** _____