

Optimizing Human Health and Nutrition: From Soil to Society

Advisory Committee Interview Report March 2023

Background

In 2021, Washington State University (WSU) and its partners received funding from the United States Department of Agriculture's (USDA) National Institute of Food and Agriculture (NIFA) for an Agriculture and Food Research Initiative (AFRI) Sustainable Agricultural Systems (SAS) project, *Optimizing Human Health and Nutrition: From Soil to Society* (the AFRI SAS Soil to Society project). According to the project's proposal, the long-term goals of this project are to create more nutritious, affordable, and accessible whole grain-based foods through (1) the investigation of the contribution of novel, biofortified crop varieties and food products to human health through clinical and epidemiological evaluations and (2) the development and deployment of nutritious food products made from improved crop varieties grown within sustainable cropping systems.

This multi-institutional and transdisciplinary project will employ a Soil to Society (S2S) pipeline strategy that addresses gaps in current knowledge and traces the flow of nutrients from agricultural systems and food production to human consumption. The strategy will culminate in the synthesis of more sustainable agricultural management strategies and healthy and affordable food products to meet the needs of diverse individuals and communities.

To address short-, medium-, and long-term goals, the project's key objectives are to:

1. Understand and apply the roles of environment, soil, and cropping system management on soil health, farm economics, and the nutritional content of the grain for each target crop (Soil Management and Cropping Systems).
2. Develop new varieties of barley, wheat, peas, lentils, quinoa, and buckwheat with enhanced health and nutritive value (Plant Breeding and Genetics).
3. Confirm the impact of nutritionally enhanced varieties on key indicators of human health and assess acceptance using consumer panels (Human Health and Nutrition).
4. Develop a diverse and innovative suite of flavorful, affordable, and nutritious food products that will be accessible to consumers from all income levels (Food Science and Product Development).
5. Conduct population studies to explore impacts on dietary quality by increasing target crop consumption in US diets and assess consumer acceptance and valuation of whole grain- and legume-based foods (Community-based Health and Nutrition).
6. Focus educational capacity on secondary student instruction, teacher professional development, and farmer training (Education).
7. Disseminate knowledge gained and products developed to stakeholders across agriculture, food and health sciences, and communities, schools, and underserved populations through a wide-reaching extension effort (Extension).

Purpose

As part of the project evaluation, the AFRI SAS Soil to Society project leadership contracted with the Office of Educational Innovation and Evaluation (OEIE) to conduct evaluation activities that assess the progress, implementation, and impacts of the project. Project leadership collaborated with OEIE to develop and conduct interviews with the project's Advisory Board members to learn about their perceptions related to progress made toward project objectives, implementation, collaboration within the project, and perceived benefits from being a part of the project. A copy of the survey is provided in Appendix A.

Methods

OEIE received an Advisory Board email distribution list from project management and sent email invitations for interviews on February 7, 2023. The emails were sent individually, requesting dates and times to schedule interviews before the end of February if the respondent wished to participate. Several reminder emails were sent to those who had not responded between February 13–28 with a final notice sent on March 3, 2023. OEIE received three confirmations for interviews and one emailed response during this time. Interviews were conducted remotely via Zoom and were recorded for analysis and verification purposes.

Respondents

OEIE received responses from four of six Advisory Board members, of which three respondents were interviewed and one respondent emailed responses. This resulted in a 66.7% response rate.

Analysis

Interviews were analyzed by (1) transcribing transcripts; (2) qualitatively coding for naturally occurring themes across transcripts using the qualitative analysis software Atlas.ti; and (3) quantifying coded themes by frequency and compiling them into summary tables (see Appendix B).

Highlights

Expectations of Project Progress

Advisory Board respondents reported that project success will be evidenced by the project moving across the spectrum of agriculture ($n = 2$), or—in other words—as the project develops and includes/involves more stakeholders from a variety of interests (e.g., consumers, health care professionals, grain producers). The Advisory Board identified a broad range of stakeholder beneficiaries, including researchers, consumers (health benefits of new, enriched commodities), industry, culture (inculcating a better understanding of nutrition), and the community ($n = 6$). A few respondents also elaborated that teachers' professional development will impact students (i.e., new knowledge, awareness, career/college plans, expand worldview, etc.) ($n = 2$).

"I think what success will look like is moving across this spectrum of how agriculture is focused."

Engagement

Respondents most frequently reported that they believe their asset contribution to the project is their specific expertise (i.e., nutrition, health care, crop genetics, etc.) ($n = 3$). While respondents frequently reported that they are sufficiently informed of the project (via Zoom, phone calls, quarterly emails, website, personal communication, etc.; $n = 6$), it was also frequently reported that the Advisory Board could be utilized more. Some suggested to allocate more time to seeking feedback from the Advisory Board for their perspectives on research updates via email ($n = 2$), soliciting the Advisory

"Team leaders could solicit comments/feedback from the Advisory Board."

Board more frequently for general information ($n = 2$), and identifying that regular meetings are not a priority if the Advisory Board is not prioritized ($n = 1$).

Implementation

“They have very good leadership.”

Respondents highlighted the project’s most attractive features to stakeholders, including the project’s multitude of dimensions/transdisciplinary character ($n = 4$), good leadership ($n = 2$), and ability to introduce new genetic benefits to consumers, producers, and the environment ($n = 2$). However, the project’s wide scope and multidimensionality were identified as potential challenges and barriers as well ($n = 2$). The difficulty of connecting health care to the project and meeting patient concerns/needs was identified as another challenge ($n = 2$). To mitigate such issues, respondents identified that project leadership could ensure and emphasize the inclusion of health and medical care in project goals now by incorporating it into presentations at annual meetings, lab designs and testing, etc. ($n = 2$).

Suggested Actions

Additional suggestions reported by the respondents for the project to consider for the rest of this grant year include the following (each theme occurred once):

- Emphasize and allocate more room for connections with stakeholders at the annual meeting.
- Hold regular meetings for postdoctoral students and students without leadership present to give updates, troubleshoot, and practice presentations.
- Emphasize federal-delegate outreach for funding advocacy and awareness.
- Utilize the Advisory Board (if needed).

“Putting that end stage up front in the presentations... would catalyze a lot more thinking across that whole trajectory, from soil on up.”

Observations and Recommendations

Observations

Generally, Advisory Board respondents reported favorably of the project’s prospects and constituents, highlighting its interdisciplinary character and wide scope of stakeholder benefits. Such perceptions align with the project’s goals of having a high degree of interdisciplinary character and benefiting a wide range of stakeholders. While wary of the potential barrier that the wide variety of stakeholders may create, especially linking the final product to consumer and health care needs, the Advisory Board believes that

“Its greatest strength is addressing the many dimensions of a biofortification project—from crop science to human health to stakeholder education...”

the project can begin mitigating this potential barrier by emphasizing such end-goals earlier in the project. These efforts will inevitably contribute to the project goals of reaching target audiences and changing their knowledge, skills, attitudes, and/or behaviors. Concomitantly, the Advisory Board identified that while they feel well-informed of the project and spoke favorably of interactions they have had with project leadership, they do not feel involved in the project itself. Many respondents identified that they did not feel involved or have been very little involved thus far (partially due to the early stage the project is currently in).

To address such complications, respondents suggested that project management ask directed questions based on research results to the respective Advisory Board member and emphasize the Advisory Board in team meetings and the annual meeting. This will, in turn, assist in aligning project research with the end-goal results and stakeholders that the Advisory Board represents. Additionally, some respondents made comments regarding sustainability of the project. While the project is still in its early stages, a respondent

recognized that the project is already underfunded and should consider emphasizing more federal-delegate outreach for funding advocacy and awareness. This effort would simultaneously contribute to connecting to end-goal stakeholders while also contributing toward the sustainability of the program. It was also suggested that additional funding, when acquired, could be used for symposia open to the public, which would increase public awareness.

Recommendations

Based on the aforementioned observations, OEIE suggests leadership consider the following actions to mitigate challenges and shortcomings the Advisory Board identified. Foremost, to increase team effectiveness in overcoming challenges, OEIE agrees with the Advisory Board that increasing team communication will help prevent major issues and thus suggest to continue having regular communication with individual teams as well as holding regular meetings for postdoctoral students and students without leadership present to give updates, troubleshoot, and practice presentations. More specific recommended actions for the challenges leadership identified are as follows:

Challenge	Recommended Action
Lack of Advisory Board engagement →	<ul style="list-style-type: none"> • Solicit Advisory Board for opinions and recommendations on research results. • Prioritize Advisory Board in team meetings and annual meetings (soliciting their feedback on discussion items, moving their allocated time to the beginning of the meeting(s), etc.).
Connecting to end-goal stakeholders →	<ul style="list-style-type: none"> • Ensure and emphasize end-goal stakeholders and their needs (e.g., health/medical care) are addressed in annual meetings, lab design, testing, etc. • Organize and direct publication topics to better meet goals. • Use additional funds for public symposia and solicit federal delegates for finances (see below) to increase awareness.
Lack of funding →	<ul style="list-style-type: none"> • More federal-delegate outreach for funding advocacy and awareness. • Search/acquire additional funding (i.e., grants).

Optimizing Human Health and Nutrition: From Soil to Society

Advisory Committee Report Summary

Appendix A – Advisory Board Interview Questions

Expectations

1. From your perspective, what are the desired impacts or benefits of the AFRI SAS Soil to Society project? (What would success look like to you?)
 - Prompt if needed: What stakeholder group(s) do you think will benefit the most as a result of this project? How might they be impacted?

Engagement

2. What assets do you and your organization bring to the partnership for this project? For example, what expertise (knowledge, skills), connections, or other resources do you have that can benefit this project?
3. What suggestions do you have related to the project's engagement of the Advisory Board in the upcoming year? Please consider engagement with specific project components (i.e., research, extension, and education) as well as with the project as a whole.
 - Prompt if needed: This might include things to do, things to avoid – either throughout the year or for the project-wide meetings specifically.
4. What approaches or methods would be most effective for keeping you informed of project-related activities?
 - Prompt if needed: Are the project's current communication strategies working well? Are they sufficient for keeping you informed about the project?
 - Prompt if needed: How frequently would you like to receive communication about the project?
 - Prompt if needed: How would you describe the response you receive when you initiate communication with the project?

Implementation

5. What would you consider to be one or two of the project's greatest strengths?
 - Prompt if needed: What aspects have the greatest potential for engaging stakeholders and improving the Soil to Society project?
6. What would you consider as one or two of the project's greatest challenges/barriers?
7. What suggestions do you have for eliminating or mitigating barriers/challenges?
8. What are one or two recommendations you would give the AFRI SAS Soil to Society project for the rest of this grant year (September, 2023) and the next grant year?

Suggestions

9. Are there any other comments or suggestions regarding the project that you think are important to document? (Do you have any other reflections you want to share?)

Optimizing Human Health and Nutrition: From Soil to Society

Advisory Committee Report Summary

Appendix B – Compiled Responses

Note: The number next to each theme represents the frequency of responses related to this theme. The number of responses (e.g., $n=$) refers to the number of respondents to the question and does not equal the number of participants. The frequencies may sum to more than the number of respondents (n) because participants could provide multiple responses to question prompts and could be coded for several themes. Quotations are edited to protect confidentiality and enhance readability. Table numbers correspond to the interview questions provided in Appendix A.

Expectations

Table 1. From your perspective, what are the desired impacts or benefits of the AFRI SAS Soil to Society project? (What would success look like to you?) ($n = 4$)

Theme	Frequency
<i>Success</i>	
Success will be evident as the project moves across the spectrum of agriculture (i.e., influencing a variety of stakeholders at different parts of the process, especially consumers)	2
Project sustained/persistence signifies success	1
Unsure. Not engaged with project	1
<i>Stakeholder impact</i>	
Impacts researchers, consumers (i.e., health benefits), industry, culture, and community	6
Teacher professional development will impact students (new knowledge, awareness, career/college plans, worldview)	2

Quotation Examples:

- “Farmers and consumers will be the stakeholders who could benefit the most from this project. Farmers may benefit financially from adopting new varieties developed from this project and consumers may derive health benefits from consuming the biofortified varieties developed from this project.”
- “I think what success will look like is moving across this spectrum of how agriculture is focused.”

Engagement

Table 2. What assets do you and your organization bring to the partnership for this project? For example, what expertise (knowledge, skills), connections, or other resources do you have that can benefit this project? (n = 4)

Theme	Frequency
Expertise in nutrition, healthcare, crop genetics, etc.	3
Little contribution due to no contact	1
Provides facilities, students, staff	1
Networking with stakeholders	1

Quotation Examples:

No example quotations are provided for this table to protect confidentiality.

Table 3. What suggestions do you have related to the project's engagement of the Advisory Board in the upcoming year? Please consider engagement with specific project components (i.e., research, extension, and education) as well as with the project as a whole. (n = 4)

Theme	Frequency
Solicit Advisory Board for feedback on research updates	2
Include perspectives of participants/team members from different backgrounds	1
Satisfied with project communication	1
Spend more time/focus on end consumer benefits (creating health benefit awareness)	1

Quotation Examples:

- “Putting some focus on that more distal end of the societal benefit or the patient benefit. I think that's an area that probably needs a little bit of impetus and support and connectivity.”
- “When providing research updates, team leaders could solicit comments/feedback from the Advisory Board.”

Table 4. What approaches or methods would be most effective for keeping you informed of project-related activities? (n = 4)

Theme	Frequency
Sufficiently informed via Zoom updates, phone calls, quarterly emails, website, personal communication, etc.	6
Allocate time to solicit the Advisory for their perspectives/email with specific questions	2
Regular meetings are not prioritized if advisory is not prioritized	1
When contacted, project leadership is quick to respond	1
Not applicable/have not initiated communication	1

Quotation Examples:

- “I feel sufficiently informed with the Zoom update meetings, the Quarterly Email, and with the launch of the website.”

Implementation

Table 5. What would you consider to be one or two of the project’s greatest strengths? (n = 4)

Theme	Frequency
Its multitude of dimensions/transdisciplinary character	4
Good leadership	2
New genetics benefit consumers, producers, and environment	2
Strong foundation of expertise	1

Quotation Examples:

- “Its greatest strength is addressing the many dimensions of a biofortification project—from crop science to human health to stakeholder education—and bringing many perspectives to the project, which enhances its effectiveness.”
- “...They have very good leadership.”

Table 6. What would you consider as one or two of the project’s greatest challenges/barriers? (n = 4)

Theme	Frequency
Connecting with healthcare and patient concerns/meeting their needs	2
Its large scope is a double-edged sword	2
Inadequately financed	1

Quotation Examples:

- “Getting out to making that connection actually into healthcare and patient concerns and not just, hey, this is healthy, this fits the USDA food triangle...but this actually meets a need that people are concerned about.”
- “...This enormous scope also poses a significant challenge for the project. In such a large project, it can be difficult to keep all of the teams focused on the project mission and goals, rather than getting distracted by individual goals of each lab.”

Table 7. What suggestions do you have for eliminating or mitigating barriers/challenges? (n = 4)

Theme	Frequency
Ensure and emphasize health/medical care (i.e., in presentations at annual meetings, lab designs and testing)	2
Have regular communication amongst leadership and individual teams	1
Organize and direct publication topics to better meet goals	1
None	1

Quotation Examples:

- “I think there's an opportunity to be thinking more broadly of what certain patient groups would want to see? What's the evidence that those components they want to see in food are important? Where are those knowledge gaps? And begin to discuss some of that.”
- “If there are more sorts of support dollars to support the teams around the faculty members, at least in medicine, the faculty members in medicine would be more efficient and productive.”

- “...What the leadership should really do is lay out a framework for specific papers that draw them [the papers] together.”

Table 8. What are one or two recommendations you would give the AFRI SAS Soil to Society project for the rest of this grant year (September 2023) and the next grant year? (n = 4)

Theme	Frequency
Emphasize/allocate more room for connections with stakeholders at annual meeting	1
Hold regular meetings for postdocs and students without leadership present to give updates, troubleshoot, and practice presentations	1
More federal-delegate outreach for funding advocacy and awareness	1
Utilize Advisory Board (if needed)	1

Quotation Examples:

- “I think there should be more federal-delegate outreach... More outreach to the various federal-delegations of the teams involved to advocate for this type of funding as well as to highlight the work and reveal what potential it has.”
- “If it doesn’t already exist, perhaps have postdocs organize a regular meeting for all the students and postdocs on the project. They could use this time, without leadership folks being present, to give updates, troubleshoot, and practice presenting.”

Suggestions

Table 9. Are there any other comments or suggestions regarding the project that you think are important to document? (Do you have any other reflections you want to share?) (n = 3)

Theme	Frequency
Appreciates project getting Advisory Board input from these interviews	1
Leadership is doing a good job	1
Move healthcare/stakeholder presentations to beginning of annual meeting	1
Search/acquire additional funding, esp. for symposia open to public	1

Quotation Examples:

- “...Putting that end stage up front in the presentations. I just think if you just forced that to the front of the annual meeting... it would catalyze a lot more thinking across that whole trajectory, from soil on up.”
- “To be looking for additional funding sources to continue the work and expand the work...it would be nice to have some symposia or something, not just at the university, but more broadly to highlight some of the work. It’s not quite ready for that yet, but as things develop, it might be nice to try to highlight it more in a more public venue.”