

American Farm Bureau Foundation for Agriculture

AR# 2521-CI

AR Title: On The Farm STEM & Leveraging Beef Checkoff Research in Science Education

AR Purpose and Description:

“An investment in knowledge pays the best interest.”

~Benjamin Franklin~

Primary Goal

Our primary goal is to provide science and STEM teachers and students with high-quality, immersive experiences and materials that teach science through the lens of beef production.

This initiative aims to:

- Increase agricultural awareness and scientific literacy of beef production among educators and students.
- Foster greater consumer trust and interest in the beef industry.

Recognizing the Disconnect

The American Farm Bureau Foundation for Agriculture (AFBFA) acknowledges the growing disconnect between consumers and beef production. Our mission aligns seamlessly with the Beef Industry Long Range Plan to build consumer trust in beef production by offering science and STEM educators access to top-notch, immersive learning experiences. Trust stems from transparency and understanding; by opening doors of opportunity to learn about authentic contexts such as beef production, we foster increased trust through education.

Building Bridges Through Collaboration

The Food and Agriculture Center for Science Education ("The Center")

<https://www.foodagscienced.org/> is dedicated to fostering collaboration between the beef industry and educators, creating pathways for a more informed future. Through this partnership, we can ensure that accurate and engaging educational materials reach classrooms nationwide.

Transparency in our educational approach builds a foundation of trust and understanding.

Engaging the Next Generation Through Educator Support

The K-12 Framework for Science Education and the Next Generation Science Standards (NGSS) have introduced a transformative era in science education. These frameworks emphasize hands-on learning, critical thinking, and real-world connections. However, their successful implementation requires substantial support for educators.

The Center addresses this need by providing teachers with high-quality resources that align with both the Framework and NGSS. These resources include curriculum materials, professional development opportunities, and online learning modules. With these tools, teachers are

empowered to create engaging and informative learning experiences for their students. By equipping educators in this way, we ensure that students gain a comprehensive understanding of science through the lens of beef production. Transparent educational practices enhance the credibility and trustworthiness of the information shared.

Aligning with Educational Trends and the Beef Industry Long Range Plan

The Framework and NGSS emphasize student engagement with real-world scientific issues, which aligns perfectly with Beef Industry Long Range Plan to address consumer concerns about animal care, sustainability, and nutrition. The Center's resources equip teachers with the tools needed to integrate these critical topics into their science curriculum, fostering a deeper understanding of modern beef production practices. By providing transparent, science-based education, we help build trust in the beef industry's practices. Science educators are the gateway to our future national collective understanding of science and the approach to finding solutions to scientific problems. All public and private students must meet science requirements to earn a high school diploma. In May of 2024, nearly 3.4 million students received high school diplomas[1], so the influence of these educators is far-reaching.

Addressing Knowledge Gaps and Building Trust

By providing science-based information about beef production, The Center empowers students to critically evaluate information and identify misleading narratives. This fosters a deeper understanding of the U.S. beef industry's commitment to responsible animal care, environmental sustainability, and food safety. Transparency in presenting the facts allows for a clearer, more trustworthy portrayal of beef production.

Benefits of Collaboration

Collaboration with educators offers the beef industry numerous benefits:

- **More Educated Consumers:** Students equipped with accurate information can make informed dietary choices as future consumers.
- **Transparency and Trust:** Open communication about beef production practices fosters trust and understanding among consumers.
- **Talent Pipeline:** Engaging students with the science behind beef production can inspire future careers in food and agriculture.

Investing in the Future

The Center's science education programs represent a strategic investment in the future of the beef industry. By building bridges with educators and empowering the next generation of consumers, The Center can play a vital role in earning trust and ensuring a positive future for U.S. beef production. Our focus on transparency and education, rather than direct consumer marketing, strengthens the trust that stems from an authentic understanding of beef production practices.

Citations:

[1] https://nces.ed.gov/programs/digest/d16/tables/dt16_219.20.asp

CBB Budget Category: Consumer Information

Start Date: 10/1/2024

End Date: 9/30/2025

FY25 CBB/BPOC Funding Request		
Direct Costs	Implementation	Total
\$480,000.00	\$120,000.00	\$600,000.00

Beef Industry Long Range Plan (LRP) Core Strategies Addressed by this AR:

- Grow Consumer Trust in Beef Production

Tactic A | 2521-CI

Building Bridges: Connecting STEM with Authentic Beef Science Education

TACTIC DESCRIPTION:

Tactic A continues the work that was begun in prior years with the goal of expanding reach and impact. This AR will build the capacity of teachers to work directly with agricultural groups in their states to deliver immersive events similar to the national On The Farm STEM event, as well as develop the skills of educators to deliver professional development around beef-funded education materials at their local or regional education centers, creating a system in which state agricultural groups could take the lead in planning and executing these types of events and could rely on “beef-trained” teacher facilitators.

Tactic A is built around three pillars: Professional Development, Education Resources, and Partnerships. By using these three pillars, the program plans to expand its reach by providing the resources and materials needed to those facilitating these efforts at the state/local level as well as prepare teachers to accurately implement science lessons built with context from the beef industry. Efforts in the FY25 AR expand impact with direct teacher and student interactions. Programming continues to extend its reach as this program includes virtual and immersive learning experiences as well as asynchronous learning opportunities.

The Need: Cultivating Informed Consumers Through Authentic Science Education

The educational landscape is undergoing a significant shift with the implementation of the Next Generation Science Standards (NGSS). These standards emphasize a deeper understanding of science through science and engineering practices and real-world connections, presenting both opportunities and challenges for educators. Agriculture, with its intrinsic link to food production, offers a powerful context for science education. However, educators may not always have access to either the latest resources specifically tailored to NGSS requirements or professional learning experiences related to beef production.

In today's information age, educators and students encounter a wide range of sources, some reliable and others not. This situation underscores the need to equip educators with tools to navigate this landscape and provide their students with credible, science-based resources about beef production.

As NGSS is implemented, science teachers must connect students with tangible, real-world contexts. Food and Agriculture remain an excellent context for science education, but educators often struggle to find high-quality, science-based resources for NGSS-aligned lessons. NGSS also requires teachers to tackle complex topics like climate change and sustainability, which necessitates accurate, collaborative efforts for authentic learning experiences and subject matter expertise. Often, misinformation prevails, and a concerted effort is needed to engage teachers in discussions to ensure balanced and accurate information.

The U.S. beef industry is committed to continuous improvement in animal care, sustainability, and environmental impact. By educating students about the science behind modern beef production practices, The Center empowers future consumers to make informed choices, contributing to a sustainable future for agriculture. Additionally, by supporting science education, the beef industry not only enhances public understanding but also increases and diversifies its potential talent pool for workforce development. Encouraging students to explore careers in agriculture and related sciences helps secure a skilled and knowledgeable workforce for the future. One that is equipped with the experiences, skills, and tools to assist industries in meeting their sustainability goals.

The Proposed Solution

To maximize the reach and impact of this program, we propose a collaborative approach that strengthens relationships with State Beef Councils (SBCs) and other local agricultural groups that engage cross-sector stakeholders, including universities, the education community, and industry leaders. The Center aims to scale up efforts by networking these diverse groups, ensuring broader dissemination of resources and support for educators.

AFBFA and select teachers from its extensive network will collaborate with SBCs to implement various aspects of this initiative, thereby achieving wider participation and resource reach. At the national level, AFBFA will train facilitators who are equipped to lead state-level events organized by SBCs and educational partners. This approach not only enhances the program's scalability but also fosters meaningful connections and trust between educators and industry leaders.

This initiative demands a significant investment of time and effort, reflecting The Center's commitment to building trust through strong relationships and effective communication. By creating opportunities for teachers to access resources within their local contexts and strengthening ties with key stakeholders, we aim to bridge gaps and promote a sustainable future for the beef industry.

AFBFA proposes the following activities to continue building and supporting its community of practice:

Classroom Resources

Investing in high-quality educational resources is crucial for equipping teachers with the tools they need to deliver effective science education. By providing accurate and engaging materials, we can improve understanding of beef production, foster trust among future consumers, and ensure wide accessibility through centralized hosting on The Center's platform.

- **Student Vetting of 10 New Beef Science Phenomena to Develop up to 2 Phenomena Outlines:** Students will evaluate 10 new beef science phenomena through surveys and focus groups, collecting data on which topics spark the most interest and curiosity. Two (2) of these phenomena will be selected based on this feedback and developed into comprehensive outlines. A phenomenon outline provides a detailed framework for teaching a specific scientific concept, making it easier for educators to create engaging and effective lessons.
- **Development of 1 New Beef Science Transfer Task:** Create one (1) new transfer task, which is an assessment used in science classrooms to test student knowledge and understanding. This assessment is designed to apply beef science concepts in practical, real-world scenarios, enhancing student learning and engagement.
- **Maintain Current Resources Available to Teachers:** Maintain existing educational resources to ensure they remain available to teachers.
- **Hosting of all new resources on The Center:** All newly developed resources will be hosted on The Center's platform, ensuring easy access for educators and students.

Professional Learning

Investing in high-quality professional development is essential for empowering educators with the skills and knowledge they need to effectively teach beef science. By providing comprehensive training and resources, we can enhance educators' capabilities, build trust in the beef industry, and ensure consistent, high-quality education across various regions.

Designed for Science Educators:

- **1 Webinar Showcasing Beef Resources:** Host one (1) webinar to showcase beef educational resources, providing educators with updated and relevant content.

Designed for Train the Trainer Teacher Facilitators:

- **Develop and Execute a Training Series for Local Facilitators to Complete an OTF or Beef Science Event:** Create and execute a training series that develops trainers to implement beef science resources locally, leveraging the Beef State Implementation Pilot that was completed in FY24 to train local facilitators.
- **Develop Facilitator Guides for Beef Unit, Tasks, and Phenomena:** Create comprehensive guides to support local facilitation at state or local-level science teacher events.

Community of Practice and Partnerships

Building a strong community of educators and stakeholders is essential for fostering collaboration, sharing best practices, and supporting the continuous improvement of beef science education. By creating and maintaining effective communication channels and engagement opportunities, we can strengthen the network of professionals dedicated to this cause. There is a growing disconnect between the public and the agricultural industry, particularly in terms of understanding beef production practices. Many science educators lack access to the latest research and resources that accurately reflect modern beef production. This gap in knowledge can lead to misinformation and mistrust among future consumers.

By connecting educators with cutting-edge research, we can bridge this gap, fostering a more informed and trusting relationship between the public and the beef industry. This includes leveraging the latest beef research conducted by key organizations such as the National Institute for Animal Agriculture (NIAA), The Meat Foundation, and the National Cattlemen's Beef Association (NCBA). The goal is to integrate this research into science education, providing educators with current, accurate, and relevant information about beef production. Additionally, creating a professional resource-sharing space where teachers can exchange materials, lesson plans, and best practices will further enhance the community's ability to deliver accurate and engaging science education. By fostering collaboration and resource sharing, we can ensure that educators have access to the tools and information they need to provide high-quality, science-based education about beef production.

- **Community of Practice:** Facilitate ongoing engagement and communication among program alumni, providing a platform for networking, resource sharing, and community building.
- **Send Engagement Materials to Community of Practice:** Distribute materials to individuals on the portal to steward ongoing conversation and engagement with beef science resources.
- **NSTA - Alumni and Community Building Efforts:**
 - **Fall Conference:** Organize an "Alumni and Friends" event at the fall conference with a short program highlighting updates to the On The Farm STEM program and beef resources available on The Center.

Communications and Promotions

Effective communication and promotion are crucial for raising awareness, engaging stakeholders, and ensuring the success of our beef science education initiatives. By leveraging various channels and strategies, we aim to reach a broad audience and foster a positive perception of modern beef production practices.

- **Paid Social Media Ad Campaigns:** Implement targeted social media advertising campaigns on platforms such as Facebook, Twitter/X, Instagram, and LinkedIn to reach educators, students, and stakeholders. These campaigns will promote educational resources, professional development opportunities, and community-building events.

- **Maintaining Network Communications:** Two blog posts on The Center's website to share updates, success stories, best practices, and educational content related to beef science. Additionally, direct email newsletters to educators, stakeholders, and alumni to keep them informed about new resources, upcoming events, and opportunities for professional development.
- **Direct Advertising in Educational Publications:** Place advertisements in prominent educational magazines, journals, and online publications to reach teachers, administrators, and education professionals. This includes publications such as "Science Teacher," "Educational Leadership," and other relevant media.

Citations:

[1] Teacher Certification Requirements by State

Measurable Objectives:

Measurable Objective #1

Educator Resources: Develop and distribute a minimum of 3 new, high-quality educational resources related to beef science.

Measurable Objective #2

Professional Development: Conduct at least 3 professional development workshops or training sessions. Achieve a satisfaction rate of 85% or higher from participants based on post-training surveys.

Measurable Objective #3

Community of Practice: Further develop platform for educators to share best practices, resources, and experiences related to beef science education, with 80% reporting positive professional interactions and collaboration through post interaction surveys.

Performance Efficiency Measures:

General Target Audience

- Educators Reach Goal: 1,650,000
- Educators Engagement Goal: 198,000

Key Opinion Leaders

- KOL Reach Goal: 85,500
- KOL Engagement Goal: 6,600

LRP Initiatives Addressed by this Tactic:

Grow Consumer Trust in Beef Production

- Align and collaborate with traditional and nontraditional partners to tell the positive story of beef cattle production

Checkoff Program Committee(s): Consumer Trust

Supplemental Information for This AR

1. Please explain significant changes from the FY24 approved AR.

Tactic A: The focus of this AR is to fully transition into a model for professional learning that a) highlights the beef-science classroom resources and ways to implement them into the classroom and b) is a train-the-trainer model to build capacity for state/local professional development activities can happen more easily.

2. List any proposed vendors/agencies that will be used to complete the work in this AR.

- Instructional Design and Project Management: Vivayic, Inc. (Lincoln, NE)
- www.vivayic.com

3. Will all work with vendors/agencies be competitively bid? If no, please provide a brief description as to why.

No. This program will leverage an ongoing relationship between AFBFA and Vivayic, Inc. Vivayic's agricultural and science education experts fulfill the responsibilities of the Ag Foundation Education Director.

4. Has this AR built upon past work or projects that have been previously funded by the BPOC? If yes, please provide a detailed list and background information on the project and contractor(s) involved.

This AR extends the reach and impact established through AR1708-CI, AR1606-CI, AR 1509-CI, AR 1921-CI, AR 2021-CI, 2121-CI, 2221-CI, 2321-CI, and 2421-CI.

5. If applicable, explain how this AR can be extended by state beef councils or other contractors.

State Beef Councils (SBCs) will have the opportunity to play a large role in the proposed AR. If desired, SBCs will deliver the professional development immersive events at the state level. SBCs will lead and assist in the teacher recruitment efforts and event planning. AFBFA will generate support materials for these events and assist in training both teachers and SBC personnel to deliver these immersive On The Farm STEM workshops/farm tours.

Detailed Budget Summary

The tables in the following three sections report program budget information from the following funding sources:

- Cattlemen's Beef Board/Beef Promotion Operating Committee (CBB/BPOC) Funding
- Other Funding sources such as:
 - Federation of State Beef Councils (FSBC) Funds
 - Individual Qualified State Beef Council (QSBC) Funds
 - Government Funds (e.g., Market Access Program, Foreign Market Development)
 - Grain/Oilseed Funds (e.g., National Corn Growers Association, American Soybean Association) Corporate Funds (e.g., tech and pharma companies)
- Other

Section 1 – FY25 Funding Requested by Tactic

FY25 CBB/BPOC Funding Requested by Tactic

The following table outlines the amount of CBB/BPOC funding that is being requested for each tactic within this AR, and the committee(s) that has been selected to score each tactic.

FY25 CBB/BPOC Funding Requested by Tactic					
Committee Name	Tactic	Tactic Name	Direct Costs	Implementation	Total
Consumer Trust	Tactic A	Building Bridges: Connecting STEM with Authentic Beef Science Education	\$480,000.00	\$120,000.00	\$600,000.00
		Total	\$480,000.00	\$120,000.00	\$600,000.00

FY25 Other Funding Sources Requested by Tactic

The following table reports the amount of proposed and/or anticipated Other Funding sources that would be applied to this AR's tactics. The funding information in this table is for informational purposes only and demonstrates external collaboration as delineated in the 2021-2025 Beef Industry Long Range Plan.

FY25 Other Funding Sources Requested by Tactic <i>(Informational Only)</i>			
Funding Source	Tactic	Tactic Name	Total
Other: American Farm Bureau Foundation for Agriculture	Tactic A	Building Bridges: Connecting STEM with Authentic Beef Science Education	\$20,500.00
		Other Funding Total	\$20,500.00

Use the space below if you wish to provide additional comments/information on the FY25 CBB/BPOC or Other Funding amounts that are being requested for this AR's tactic(s).

N/A

Section 2 – Summary of FY24 AR Budgets and Expenses

Classification: This AR is a continuation of, or builds upon, program work from last year. CBB will report information in the "FY24 CBB/BPOC Funding" table and the contractor will provide information for the "FY24 Other Funding Sources" table.

FY24 CBB/BPOC Funding

This table reports the amount of awarded and expended CBB/BPOC funding for this Authorization Request in FY24.

FY24 CBB/BPOC Funding			
<i>Note: The Cattlemen's Beef Board completed the fields in this table.</i>			
	AR# 2421-CI		
	Direct Costs	Implementation	Total
Funds Awarded	\$680,000.00	\$120,000.00	\$800,000.00
Actual Expenses <i>(October 1, 2023 - June 30, 2024)</i>	\$288,387.00	\$48,358.00	\$336,745.00

FY24 Other Funding Sources

The following table reports the amount of committed and expended "Other Funding Sources" for this AR in FY24. The funding information in this table is for informational purposes only and demonstrates external collaboration as delineated in the 2021-2025 Beef Industry Long Range Plan.

FY24 Other Funding Sources <i>(Informational Only)</i>			
	AR# 2421-CI		
	Other Funding Source	Funds Committed	Funds Expended <i>(October 1, 2023 – June 30, 2024)</i>
A	Other: American Farm Bureau Foundation for Agriculture	\$10,000.00	\$10,000.00

Use the space below if you wish to provide additional comments/information on the FY24 CBB/BPOC or Other Funding amounts that are being requested for this AR's tactic(s).

N/A

Section 3 – Historical Summary of AR Budgets and Expenses

Classification: This AR is a continuation of, or builds upon, program work from the last two years or more. CBB will report information in the "CBB/BPOC Historical Summary" table and the contractor will provide information for the "Other Funding Sources Historical Summary" table.

CBB/BPOC Funding – Historical Summary

The following table reports the amount of awarded and expended CBB/BPOC funding for this AR in FY21, FY22, and FY23.

CBB/BPOC Funding - Historical Summary				
<i>Note: The Cattlemen's Beef Board completed the fields in this table.</i>				
		FY23 AR# 2321-CI	FY22 AR# 2221-CI	FY21 AR# 2121-CI
AR Period¹	<i>Start Date:</i>	<i>Oct. 1, 2022</i>	<i>Oct. 1, 2021</i>	<i>Oct. 1, 2020</i>
	<i>End Date:</i>	<i>Sep. 30, 2023</i>	<i>Sep. 30, 2022</i>	<i>Dec. 29, 2021</i>
Funds Awarded		\$900,000.00	\$926,000.00	\$670,996.00
Actual Expenses²		\$900,000.00	\$895,344.00	\$575,514.00

¹For multiyear ARs, the "End Date" reflects the date that the AR is scheduled to be completed.

²If the AR "End Date" has not occurred, actual expenses will be reflective of the following time period:
AR Start Date - June 30, 2024.

Other Funding - Historical Summary

The following table reports the amount of "Other Funding Source" expenditures for this AR in FY21, FY22, and FY23. The funding information in this table is for informational purposes only and demonstrates external collaboration as delineated in the 2021-2025 Beef Industry Long Range Plan.

Other Funding Sources – Historical Summary (Informational Only)						
	FY23 AR# 2321-CI		FY22 AR# 2221-CI		FY21 AR# 2121-CI	
	Other Funding Source	Total Expenditures	Other Funding Source	Total Expenditures	Other Funding Source	Total Expenditures
A	Other: Dairy Management Inc.	\$37,000.00	Other: Dairy Management Inc.	\$2,250.00	Other: American Farm Bureau Foundation for Agriculture	\$6,000.00
B	Other: American Farm Bureau Foundation for Agriculture	\$10,000.00	Other: American Farm Bureau Foundation for Agriculture	\$11,789.00		

Use the space below if you wish to provide additional comments/information on the historical CBB/BPOC or Other Funding budget and expense summaries.

N/A