**Project/Activity Number: W5177**

**Project/Activity Title: Enhancing the Competitiveness and Value of U.S. Beef**

**Period Covered: September 2022 to September 2023**

**Date of This Report: 10-13-2023**

**Annual Meeting Date(s): 9-11-2023**

**Participants:**

Oltjen, James (jwoltjen@ucdavis.edu) - California -Davis : University of California, Davis; Kim, Brad (bradkim@purdue.edu) - Indiana - Purdue University; Chao, Michael (mdchao@ksu.edu) - Kansas - Kansas State University; Narayanan Nair , Mahesh (Mahesh.Narayanan\_Nair@colostate.edu) - Colorado - Colorado State University; Sullivan, Gary A (gsullivan3@unl.edu) - Nebraska - University of Nebraska; Bass, Phil (pbass@uidaho.edu) - Idaho - University of Idaho; McKendree, Melissa (mckend14@msu.edu) - Michigan - Michigan State University; Lorenzen, Carol (carol.lorenzen@oregonstate.edu) - Oregon - Oregon State University; Colle, Michael (mjcolle@uidaho.edu) - Idaho - University of Idaho; Vahmani, Payam (pvahmani@ucdavis.edu) - California -Davis : University of California, Davis; Yang, Xiang (xcryang@ucdavis.edu) - California -Davis : University of California, Davis; Lopez, Rigoberto (Rigoberto.Lopez@uconn.edu) - Connecticut -Storrs; Hackmann, Timothy J (tjhackmann@ucdavis.edu) - California -Davis : University of California, Davis; Skulas-Ray, Ann (skulasray@email.arizona.edu) - Arizona - University of Arizona; Gehring, Kerri (kbgehring@tamu.edu) - Texas AgriLife Research; Dinh, Thu (thu.dinh@tyson.com) - Tyson Foods; Zhai, Chaoyu (chaoyu.zhai@uconn.edu) Connecticut -Storrs; Setyabrata, Derico (dericos@uark.edu) - Arkansas - University of Arkansas; Miller, Rhonda K. (rmiller@tamu.edu) - Texas AgriLife Research; Scheffler, Tracy L (tscheffler@ufl.edu) - Florida - University of Florida; Britton, Logan (lbritton@ksu.edu) - Kansas - Kansas State University; DeMello Amilton (ademello@unr.edu) - University of Nevada – Reno; Bret Hess (bhess@unr.edu) - University of Nevada – Reno

**Virtual Meeting Attendees:**

Jim Oltjen, Xiang Yang, Rhonda Miller, Derico Setyabrata, Michael Chao, Rigo Lopez, Kerri Gehring, Timothy Hackman, Payam Vahmani, Brad Kim, Amilton Demello, Melissa McKendree, Chaoyu Zhai, Gary Sullivan, Phil Bass, Michael Colle, Tracy Scheffler, Carol Lorenzen, Logan Britton, Anna Skulas-Ray, Thu Dinh, and Bret Hess

**Brief summary of minutes of annual meeting:**

Agenda:

10:00 – 10:10 am (PT) Call to order – Introductions

10:10 – 10:20 am Administrative Report – Brett Hess

10:20 – 10:30 am Chair and secretary report

10:30 – 11:40 am Station reports (~10 min/station)

11:40 – Noon Discussion for possible collaborations

Noon Adjourn

Meeting was called by Chair Dr. Michael Colle at 10 am. The meeting began with agenda item #1 - a self-introduction of all the participants with their names and the university they are affiliated with.

Following the self-introduction, the meeting moved to agenda item #2 - administrative report by admin advisor Dr. Bret Hess. Dr. Hess emphasized the importance of collaboration among the stations. He also shared the correct format for the Annual reports for the multistate projects, which are SAES/Appendix D format. He also reminded the group that we will have to pull all the key information together to put together one single impact statement that encompasses all objectives. He also shared the current USDA funding environment, which the agency has requested a 14% increase in research expenditures to match other nations like China and Brazil who are investing in research at a rate of increase of 14% a year. He ended by pointing out that there may be infrastructure improvement funding for all colleges of agriculture in all states that we should take advantage of.

For agenda #3, Dr. Michael Colle began with thanking Dr. DeMello, Dr, Sullivan and Dr. Dinh for helping him to put together the W5177 project together. Dr. Michael Colle also pointed out that he needs a new secretary for the program as Dr. Charles Martinez was not participating in the projects. Dr. Michael Chao has volunteered to serve as the secretary. Dr. Gary Sullivan brought up the need to have in-person meetings to enhance collaborations among the stations. Dr. Rhonda Miller brought up having the meeting at NCBA in Denver as it is a central location and its close proximity to US Meat Export Federation and JBS Greeley Colorado Beef Plant. Dr. Rhonda Miller will contact Dr. Jessica Lancaster at NCBA to schedule a potential meeting date for next year’s meeting. Dr. Melissa McKendree brought up there is an Ag Econ meeting in Denver around May, and we may be able to attract more Ag economists to participate in this meeting if we held the W5177 meeting in conjuncture with an Ag Econ conference. Chair Dr. Michael Colle seconded the point.

For Agenda #4, the station reports were provided in the following order:

1. Drs. Jim Oltjen and Xiang Yang (California), which they shared their work on eating quality and safety of steaks from beef raised on different feeding systems in Western United States.

2. Dr. Rhonda Miller (Texas) shared her research to further understand the connections between beef descriptive flavor and texture attributes and consumer preferences. She also shared that she and multiple other W5177 participants are on this NCBA flavor sub-committee group, which highlighted collaborations among the stations.

3. Dr. Derico Setyabrata (Arkansas) shared the study that focused on identifying the impact of different consumer freezing methods and product size (steaks vs roast) on beef quality from different muscles.

4. Dr. Michael Chao (Kansas) shared recently published work from last year’s projects, and he also shared on-going work investigating a technique known as accelerated aging (AA) to improve the quality of lower quality beef cuts as well as applying an electrostatic field (EF) on thawing characteristics of beef.

5. Dr. Rigo Lopez reported their work on understanding the price discrepancy of sales price of beef from different regions as well as the price that the cattlemen receive.

6. Dr. Kerri Gehring (Texas) shared that they have successfully completed the national beef quality audit and the national beef tenderness survey and shared the results at Reciprocal Meat Conference and International Congress of Meat Science and Technology. She also shared that they have other beef on dairy and freeze and thawing projects that are currently on-going.

7. Drs. Timothy Hackman and Payam Vahmani (California) shared their work on identifying specific bacteria that are responsible biohydrogenation in the rumen by using genomics and biochemical assays. Their goal is to be able to manipulate the fatty acid profile of beef by manipulating the microbial species in the rumen.

8. Dr. Brad Kim (Indiana) continued to work on understanding the impact of tumbling on low quality grade beef (USDA Select). Their current goal is to use artificial intelligence (AI) based Machine Learning tools and regression analysis to help producers to determine the ideal tumbling parameters for different applications. They are also working on establishing muscle-specific optimal aging practice considering different color stability of different beef muscles.

9. Dr. Amilton Demello (Nevada) is working on identifying the microRNA profile of beef from a different production system. They are also still working on investigating the effect of bacteriophages to reduce food safety risk.

10. Dr. Melissa McKendree (Michigan) shared her work on metrics, management and monitoring rangeland and pasture soil health and their drivers. They also work on cattle traceability producer survey and consumer survey on dairy crossbred beef.

11. Dr. Chaoyu Zhai (Connecticut) is still in the process of rebuilding the meat science research program at the University of Connecticut, so he does not have any key research results to share.

12. Dr. Gary Sullivan (Nebraska) talked about their work on dry aging beef as well as some work in collaboration with Oklahoma State University on dark cutting beef. They utilized high pressure processing to improve the color of dark cutting beef. They will also do some consumer and willingness to pay studies to understand the effect of high-pressure processing on improving the value of dark cutting beef.

13. Drs Phil Bass and Michael Colle (Idaho) shared their work on how to mitigate deep portion of the top round of larger carcasses taking longer to chill and therefore has a more rapid pH decline, which will negatively affect the shelf-life of the top round. They are also working on using rosemary extract and acerola cherry powder to extend the color stability of beef chuck rolls and short ribs.

14. Dr. Tracy Scheffler (Florida) talked about their on-going research on postmortem mitochondrial function and how that can affect the subsequent calcium regulation and proteolysis. They are also looking at ways to manipulate the calpain/calpastatin system to improve the tenderness of beef from Brahman cattle.

15. Carol Lorenzen (Oregon) shared that she has minimal research appointment now as she is the department head. She mentioned she finally got a manuscript on tenderness and calpain 1 activity published from her final work from her previous institution.

16. Dr. Logan Britton (Kansas) just joined the group and is looking at consumer preference for conventional and plant-based meat alternatives. He also just received an USDA grant investigating nonzoonotic disease outbreak in beef and pork and APHIS policy.

17. Dr. Anna Skulas-Ray is looking at fatty acid profile differences between conventional and grass-finished beef, particularly, looking at some rare omega 3 fatty acids’ location in meat.

18. Dr. Thu Dinh (Tyson, former member of Mississippi station) reminded everyone that it is important to report any collaboration among group members as that is the main objective of this group. He also made the announcement that he is willing to help members on plant access. Finally, he talked about opportunity in by-product innovation studies, which Tyson may be able to provide small grant for this area of work.

Agenda #5- Dr. Demello pointed out that some of the projects reported may not be associated with the objectives listed in W5177, so it is important to make sure that the reported works are consistent with the objectives listed in the project. We also talked about there are 60 days to wrap things up to submit the final report, so we encouraged the participants to submit their work in bullet points ASAP to give the chair and secretary time to put together the final report.

Chair Dr. Michael Colle made final remarks on thanking everyone for attending, and he wishes to see everyone next year during the in-person meeting, hopefully in Denver.