TEXAS A&M AGRILIFE

INSTITUTE FOR ADVANCING HEALTH THROUGH AGRICULTURE

AGRICULTURE NUTRITION RESEARCH WORKSHOP

August 1-2, 2022 | Dallas, TX

TABLE OF CONTENTS

Contact

Elizabeth Parker, DVM
Interim Associate Director,
Responsive Agriculture
979.314.3280
IHA@ag.tamu.edu

EXECUTIVE SUMMARY

On August 1-2, 2022 the Texas A&M AgriLife Institute for Advancing Health Through Agriculture (IHA) held its first workshop to engage selected key stakeholders from the food-ag value chain. Working to focus food systems on improving human health, while supporting the environment and economy, the IHA used this workshop to engage production agriculture groups to further understand priorities, gaps and opportunities in precision nutrition, responsive agriculture, and social and behavioral research.

Bringing together more than 50 people across 30 plus organizations, representing commodities nationally and in Texas, the two-day event gave production agriculture groups an unprecedented opportunity to share and discuss their human nutrition research programs and priorities. National speakers invited ranged across the commodities from food crops, tree nuts, fruits and vegetables, livestock, honey and dairy. All of the major Texas agriculture groups were invited to participate in the discussions. Other national agricultural groups representing a broad membership were invited as well as United States Department of Agriculture, Agriculture Research Service (USDA ARS) nutrition and food safety program leads. A list of all participants can be found in *Annex 3*; speaker biographies can be found in *Annex 2*.

The workshop purposes were to introduce the IHA and learn more about individual industry's human nutrition research programs, priorities, and gaps. Understanding producer priorities and current activities helps IHA leadership identify synergies and collaborative opportunities as the Institute develops its three interconnected research foci. Workshop information will be used to better inform the further development of IHA's research program. This and future input from industry will help shape how the IHA fills gaps in agricultural research as it seeks to

connect responsive agriculture, precision nutrition, and social and behavioral research (referred to as the healthy living hub within the IHA) to develop research and innovation aimed to improve human health.

The IHA launched in February 2022 with a leadership team of Patrick Stover, Ph.D., director of the IHA, Elizabeth Parker, DVM, interim director of responsive agriculture, Regan Bailey, Ph.D., MPH, RD, associate director of precision nutrition, and Rebecca Seguin-Fowler, Ph.D., RD, associate director of healthy living. The IHA is partnering with the USDA ARS Responsive Agricultural Food Systems Research Unit. Co-located within the IHA, the ARS unit and IHA will work collaboratively with other ARS and land-grant universities to bring big data, state-of-the-art biosensors and computational systems-based approaches to responsive agriculture and precision nutrition.

Dr. Stover opened the workshop by providing an overview of the IHA, its mission, vision and goals; explaining that the IHA is focused on shaping future food systems to improve human health, saving lives and reducing health care costs. To be successful this must be accomplished in a way that makes sense economically for producers and protects the environment, enabling agriculture to sustain populations for generations to come. Drs. Parker, Bailey and Seguin-Fowler provided high-level overviews of the three IHA focus areas: Precision Nutrition, Responsive Agriculture and Healthy Living.

Nineteen scientists from industry presented, providing information on their commodity's human nutrition research programs and strategies, including priorities and gaps. Each commodity's duration of investment in human nutrition research varied from a couple of years to over 30 years to almost 100 years. The research programs had many similarities in their development and implementation. Beyond alignment on process, groups' research priorities and focus areas were mostly aligned as well, with key priority areas focused around cardiometabolic and brain health, gut health, antioxidants, anti-inflammatory properties, and other key health attributes. However, a few particular food commodity differences did emerge. Some commodity research focused on specific interests, such as extending shelf-life, improving palatability/how the food tastes with other foods, ensuring clear labels/health claims on packages for consumers, and conducting a comprehensive analysis of the commodity in order to better inform clinical trials.

Overall, many groups were interested in exploring more clinical trials, as well as more research on human behavior/consumer perceptions, and sustainably maintaining a healthy, diverse diet. Moreover, they were interested in ensuring consumers understand (and therefore accept) food commodity improvements resulting from new advances using innovative techniques such as CRISP-R, gene editing, etc. Additional details on individual speaker presentations can be found in *Annex 4 Speaker Presentations*.

Following the presentations, workshop attendees separated into two groups to conduct in-depth discussions around a set of questions that had been provided to participants in advance (the questions and discussion details can be found in the report section entitled, *Summary of Breakout Group and Plenary Discussions*). Discussions elucidated answers in the following common themes:

- The need for a systems level approach that connects responsive agriculture, precision nutrition and healthy living and that the ag value chain does not yet know how to do this; a need exists on thought leadership around how nutrition ties to agriculture production.
- Establishing rigorous scientific methodology.
- Behavioral assessments and evaluations.
- Understanding the vulnerabilities and misperceptions about food composition (e.g., aflatoxin, anti-nutrients).
- Facilitating the improvement of compositional data (better ways, more efficient, less expensive).
- Collaboration across commodity groups and with IHA.

Participants also emphasized:

- There is an expectation for IHA to provide thought leadership in connecting responsive agriculture, precision nutrition, and healthy living behaviors. All sectors are enthusiastic and supportive regarding the Institute's mission and goals. Connecting the three is much needed and to date no other entity has endeavored to do so.
- Support IHA including the entire supply chain in the conversation.
- IHA to be a neutral, trusted source of information.
- IHA could provide a research model/roadmap to visualize the connection of production agriculture, precision nutrition, and healthy living behaviors.
- IHA could provide a model for effective public private partnerships (PPPs) in this research space.
- IHA could fill a gap to foster improved communication with government regulatory and policy entities in order to improve barriers to innovation.
- Promote scientific research and perspectives on key topics with government agencies in order to address barriers to innovation and adoption.
- Assist food commodities to, as competitors, finding a common goal in the agriculture production- human health-environment space.
- Research and communication in identifying a "whole plate" related to benefits of specific nutrients. and within the total dietary matrix.
- Where/if lacking, create the standards we need to foster trust in industry research.
- Give feedback into commodity research programs (e.g., research priorities) and continual efforts to improve scientific methodology.

- Integrative approach to facilitate urban and rural research and validating the metrics currently available.
- Generate metrics that incorporate important issues (e.g., greenhouse gas versus protein; are we measuring the right things?). Need common baseline metrics and collective continuous improvement.
- Behavioral and consumer research, including more research on consumers' perspectives and adoption of lifelong sustainable healthy nutrition practices (methods, definition, cultural, economic, other domains).
- Commodity groups want to continue to be part of the IHA conversations and dialogue.

Work conducted during the workshop sets the stage for future collaborations with this important sector of the agriculture value chain. The IHA will continue to solicit input from all agricultural sectors. IHA's foundational premise is that agriculture is the solution to improving human health for today and future generations. This can only be realized if the Institute is actively engaged with production agriculture as well as working together across the entire food-ag value chain.

INTRODUCTION

On August 1-2, 2022, the Texas A&M AgriLife Institute for Advancing Health Through Agriculture (IHA) held its first workshop to engage selected key stakeholders from the food-ag value chain. Working to focus food systems on improving human health, while supporting the environment and economy, the IHA used this workshop to engage production agriculture groups to further understand priorities, gaps and opportunities in precision nutrition, responsive agriculture, and healthy living (i.e., social and behavioral research).

Bringing together more than 50 people from over 30 organizations, representing commodities nationally and in Texas, the two-day event gave production agriculture groups an unprecedented opportunity to share and discuss their human nutrition research programs and priorities. Speakers invitees were the technical nutrition research leads (or their designee) from all of the national checkoff programs that are food commodities to present their nutrition research portfolios: https://www.ams.usda.gov/rules-regulations/research-promotion In addition, speakers were invited from a few commodities that do not have a national checkoff but have a foundation (or they have state checkoffs) that have a nutrition research portfolio. Likewise, the International Fresh Produce Association (IFPA) nutrition lead was invited to speak. Speakers invited ranged across the commodities from food crops, tree nuts, fruits and vegetables, livestock, honey and dairy.

All of the major Texas agriculture groups were invited to participate in the discussions (and each was encouraged to work with their respective national commodity speaker as appropriate). Other national agricultural groups representing a broad membership were invited as well as United States Department of Agriculture, Agriculture Research Service (USDA ARS) nutrition and food safety program leadership. A list of all participants can be found in *Annex 3* and speaker biographies can be found in *Annex 2*.

The two-day workshop purposes were to introduce the IHA, learn more about individual industry's human nutrition research program, priorities and gaps, which will better inform IHA's research programs. Understanding producer priorities and current activities helps IHA leadership identify synergies and collaborative opportunities as the Institute develops its precision nutrition, responsive agriculture and healthy living research foci. Production agriculture is vital to the success of the IHA and accomplishment of its mission. The IHA seeks to complement, not duplicate, ongoing research and contribute to filling in priority research gaps, making continued advancements in agriculture's positive role in human nutrition, as well as environmental and economic health.

SUMMARY OF PRESENTATIONS

Dr. Stover opened the workshop and provided an overview of the IHA, its mission, vision, and goals. He explained that the imperatives of the food system have changed, noting that we have the most efficient and robust agriculture and food system, which has allowed us to solve much of the poverty, famine and hunger experienced during the great depression and the post-World War II era. Given the success of our food system in producing enough food, now, the food system needs to be responsive to meet evolving expectations. It needs to improve human health in a way that supports the environment and the economic viability of producers.

He highlighted that the goal of producing inexpensive calories to eliminate hunger has shifted costs to the health care and environmental sectors. Specifically:

- Health: The overconsumption of calories has contributed to a national and global epidemic of obesity and diet-related chronic disease. According to a 2017 report from the RAND Corporation (1), as of 2014, six in 10 adult Americans had at least one chronic condition and four in 10 had more than one. Diet-related chronic disease places a heavy burden on the health care system, costing trillions of dollars and contributing to a reduced quality of life for millions of American. The adverse effects of COVID on people with chronic diseases only amplified the awareness of this underlying epidemic of diet-related chronic disease.
- Environment: Farmers and ranchers have long been great stewards of the land and natural resources. Today, climate change and increasing climate variability threaten future food production. More than ever, agriculture producers need more innovation, better tools to address these environmental challenges, continuing to sustain natural resources and keeping land fertile and productive for generations to come.
- Economy: At the same time, there is increasing concern that the US agriculture and food system is not economically sustainable, given the thin cost margins for producers and loss of productive farmland to more lucrative uses.

Stover underscored the challenge, saying "There is a chronic disease epidemic in this country, and there are enormous financial and environmental challenges our producers are facing. The food and agriculture system of the future must focus then not on sheer calories but on improving human health, while ensuring the economic stability of our agricultural workforce and the long-term health of our environment such that our agricultural lands are available for future food production and food production is economically viable."

(1) Buttorff, Christine, Teague Ruder, and Melissa Bauman, *Multiple Chronic Conditions in the United States*, Santa Monica, Calif.: RAND Corporation, TL-221-PFCD, 2017. As of August 26, 2022:

The IHA believes agriculture is the solution. Dr. Stover explained that the IHA is focused on shaping future food systems to improve human health, saving lives and reducing health care costs. But, he noted that it can and must do this in a way that makes sense economically for our producers and protects our environment, so it can sustain populations for generations to come.

He outlined how the IHA is helping to bring this vision to fruition. The IHA is the world's first research institute to bring together precision nutrition, responsive agriculture, and social and behavioral research to reduce diet-related chronic disease in a way that considers environmental and economic effects. The IHA, composed of three focus areas—Responsive Agriculture, Precision Nutrition and Healthy Living—engages experts across many disciplines, including agriculture, nutrition, behavioral, social and life sciences, engineering, data and computation science, and economics.

The IHA launched in February 2022 with a leadership team of Patrick Stover, Ph.D., director of the IHA, Elizabeth Parker, DVM, interim director of responsive agriculture and associate director for international programs and strategic initiatives, Regan Bailey, Ph.D., RD, associate director of precision nutrition, and Rebecca Seguin-Fowler, Ph.D., RD, associate director of healthy living.

The IHA is partnering with the USDA ARS Responsive Agricultural Food Systems Research Unit. Co-located within the IHA, the ARS unit and IHA will work collaboratively with other ARS and land-grant universities to bring big data, state-of-the-art biosensors and computational systems-based approaches to responsive agriculture and precision nutrition. Representatives from ARS joined the meeting to hear and engage with commodity groups to inform the research unit's work.

The ARS unit will focus on three key objectives:

- Developing a better understanding of the relationship between animal and plant agricultural production and management, the environment, nutrient quality and content and human health.
- Developing innovative data strategies to advance precision agriculture and nutrition, and link and analyze large and diverse datasets using cutting edge data science/data engineering approaches, such as AI and machine learning.
- More clearly defining the requirements for and the role of food and human nutrition in public health, focusing on subgroups and underserved populations and determining how precision agriculture can help meet these requirements and improve human health.

Within Texas A&M, the IHA has funded over $1.5 million in associate member research across responsive agriculture and precision nutrition in 2022.

Stover called for collaboration, noting that the developing transformative research and applied technologies to support a food and agriculture system focused on improving human health while ensuring producer prosperity and the protection of the environment requires the engagement of the entire food-ag value chain.

Agricultural producers are at the heart of the IHA's efforts, which is why the Institute's very first workshop engaged production agriculture. This workshop marks the first in a series of stakeholder workshops that seek to generate awareness, gather input and ultimately inform research and innovation throughout the food-ag value chain, as the IHA further develops and implements its research programs.

Parker, Bailey and Seguin-Fowler additionally provided high-level overviews of the three IHA focus areas.

Precision Nutrition, a nascent science, is a comprehensive and dynamic approach to understanding nutrition based on how population subgroups and individual differences in the response to diet and their impact on health based on factors such as sex, age, genetic predisposition, as well as factors that are modifiable like sleep, meal timing and frequency, and access to foods, to name just a few. The goal of this focus area of the IHA is to understand how individual and population subgroup differences interact with diet as it relates to health. Understanding these gaps will have inform more focused nutritional guidance in order to optimize health.

Responsive Agriculture is a science-based, dynamic approach to agriculture that seeks to respond to the growing public health challenge of escalating chronic disease in Texas and across the nation while considering, environmental sustainability and economic viability.

Healthy Living encompasses the social and behavioral sciences. Specifically, the research within this focus area includes the development, evaluation and dissemination of community-engaged health promotion and chronic disease prevention intervention programs that integrate individual, sociocultural, environmental and policy/system-level factors.

Nineteen scientists from industry presented over the two-day workshop, providing information on their commodity's human nutrition research programs and strategies, including priorities and gaps. The length of time the commodities represented have conducted their human nutrition research programs varied from launched within the last few years (pecans) to over 30 years (walnuts) to almost 100 years (National Dairy Council). There were many similarities in how research programs were developed and implemented: priorities and portfolios developed by producer led committees, science committees and review,

requirements to publish research resulting from request for proposals (RFPs) and other industry funded research, collaborations with U.S. and international academic scientists and U.S. government. There were also similarities in identified major priority areas of research. Groups from across row food crops, nuts, tree nuts, fruits and vegetables, livestock and dairy highlighted several key priority areas; many of which surrounded cardiometabolic health, gut health, antioxidants, anti-inflammatory properties, and other key health attributes. Industry programs also had commonalities and either current or future research portfolios included interest in supporting human health across the lifespan (growth, living, aging), brain health/cognitive function, immune function, metabolic health and chronic disease (e.g. diabetes, etc.), addressing misperceptions, protein quality, allergenicity, endocrine/hormone effects, reproductive health, cancer, digestibility of nutrients, improved comprehensive understanding of composition and micronutrients, impacts of processing techniques, precision nutrition, and mining epidemiology research from other data sets.

For some commodities other research interests were extending shelf-life, improving palatability/how the food tastes with other foods, ensuring clear labels/health claims on packages for consumers, and conducting a comprehensive analysis of the commodity in order to better inform clinical trials. There was an interest in more clinical trials, more research on human behavior/consumer perceptions and sustainably maintaining a healthy, diverse diet. Moreover, they were interested in ensuring consumers understand (and therefore accept) food commodity improvements resulting from new advances using innovative techniques such as CRISP-R, gene editing, etc. Consumers view taste and nutrition as the baseline and want to know "what else can the food (commodity) do for them."

Additional details on individual speaker presentations can be found in *Annex 4 Speaker Presentations*.

SUMMARY OF BREAKOUT GROUP AND PLENARY DISCUSSIONS

All workshop attendees separated into two groups to conduct in-depth discussions around a set of questions that had been provided to participants in advance. The goal of the breakout format was to encourage engaged discussion and more detailed and specific input from the participants in order to better inform IHA's developing research portfolios. The questions were:

Questions

1. What scientific advances are needed to improve the human health promoting properties and profitability of production in your priority areas?
2. What are the blind spots that are barriers to innovation? (rank, if possible)
   a) what are the barriers to adoption?
3. What are the common gaps in research across the commodities that have the potential to advance human health, environmental sustainability and producer profitability?
4. How do you want identification of your commodity/product in the human nutrition space? What is the worry or benefit?
5. The IHA is linking agriculture production (responsive agriculture) – precision nutrition and healthy living behaviors with the intent to drive research and technology innovations to better connect agriculture with human, environmental and economic health benefits.
   a) Do you have specific suggestions of tangible ways to marry these three areas to more rapidly address some of the areas identified in questions 1-4 above?
   b) What are your priorities for how IHA can facilitate where there are gaps and natural intersections between agriculture, human and environmental health?
6. What can this IHA/ARS research collaboration do for production agriculture?

Each breakout group had a leader and scribe who presented a summary of the discussions in the ensuing plenary session. Group 1 identified and presented answers to the questions around the following common themes:

I. Establishing rigorous scientific methodology
   - Dietary intake, health outcomes
   - Measuring health outcomes (e.g., metabolomics, biomarkers).

II. Behavioral assessments and evaluations

III. Understanding the vulnerabilities and misperceptions about food composition (e.g., aflatoxin, anti-nutrients).

IV. The need for a systems-level approach that connects responsive agriculture, precision nutrition and healthy living and that the ag value chain does not yet know how to do this; A need exists for thought leadership regarding how nutrition ties to agriculture production.
V. Facilitating the improvement of commodity compositional data (better ways, more efficient, less expensive).
VI. Collaboration across commodity groups and with IHA
    - Continued dialogue needed, inclusive of all the foods and does not disparage, facilitate trust and be a model for public private partnerships (PPPs). The collaboration would include:
        - Dietary patterns
        - Being an advocate for all represented foods
        - Fostering continuous improvement
        - Urban and rural agriculture
        - Longer-term thinking on nutrition research investment and priorities.
        - Fostering technology adoption and innovation (e.g., CRISP-R, patenting, licensing); including assisting to improve the efficiency and clarity of the regulatory process for such products
        - Sustainable nutrition: there is uncertainty in the definition and measurement of this

Group 2 provided the following feedback to the questions:

1. What scientific advances are needed to improve the human health promoting properties and profitability of production in your priority area?
    - Improving human health promoting properties
    - Integrate the commodities research on foods and biomarkers for personalized nutrition and creating materials
    - Allergies and intolerances
    - Food innovation and consumer insights on health promoting behaviors and motivators
    - Profitability of production and ensure innovations are economically viable
        - Plant breeding
        - Drought tolerance
        - Feed efficiency
        - Identify gaps in research on terminology of foods and how they are studied so that the body of research can be assimilated
        - Identify what is practical to improving human health (e.g., processed foods)
    - Communicating the collective story for health, sustainability and production

2. What are the blind spots that are barriers to innovation?
    - Effective, tangible consumer education
    - Food fear and mistrust in who produces food as well as mistrust in science
    - Cognitive biases, echo chamber with social media

    a) What are the barriers to adoption?
        - Innovation barriers identified were government regulatory, policy and database challenges. Some examples include:
            - USDA Agriculture Marketing Service (AMS) communication hurdles for the commodity and promotion programs
            - FDA food policy lags behind and therefore stifles innovation; very slow to provide regulatory and food policy clarity, transparency and clearly defined regulatory pathways
        - Adoption barriers identified were focused on consumers:
            - Food fear and mistrust of agriculture
            - Partner with retailers/food service to identify/improve consumption of nutrients of concern
            - Use consumer insights to better understand the consumer.
            - Be more proactive and forward thinking, rather than defensive

3. What are the common gaps in research that can advance human health, sustainability and profitability?
    - Research methodologies and communication: need ability to have consistent terminologies (e.g., definition of processed, definitions of meat)
    - Consistently updated nutrient analysis for each commodity (plenary discussion further elucidated U.S. government official nutrient analysis databases for each commodity are not updated in a timely way and do not reflect updated information provided by research. This causes problems with labeling, and accurate information for consumers and health professionals to make informed decisions

4. Suggestions of tangible ways to marry responsive agriculture, precision nutrition and healthy living behaviors with the intent to drive research and technology innovations to better connect agriculture with human, environmental and economic health benefits. And priorities for how IHA can facilitate where there are gaps and natural intersections between agriculture, human and environmental health.
    - Interventions, education and programs using collective body of research, and in a non-disparaging way amongst the food commodities. Making sure that a

consistent collective story is being told that does not promote anti-food/anti-ag messaging.
- Continue and promote innovations
- IHA to serve as a neutral party, facilitates a collective voice of the science, filter information and become a trusted source of information.
- Facilitate/find ways to assist in telling the agriculture and human health story (e.g., tours for health professionals, consumers, thought leaders, ag value chain)
- Behavioral science: better understand consumers now and in the future
- Assist to change approach in messaging research and scientific advancements to proactively positive

Plenary discussions further highlighted some of the above common themes resulting from the two breakout discussions:

- There is an expectation for IHA to provide thought leadership in connecting responsive agriculture, precision nutrition and healthy living behaviors. All sectors are enthusiastic and supportive regarding the Institute's mission and goals. Connecting the three is much needed and to date no other entity has endeavored to do so.
- Support IHA including the entire supply chain in the conversation.
- IHA could provide a research model/roadmap to visualize the connection of production agriculture, precision nutrition and healthy living behaviors.
- IHA could provide a model for effective PPPs in this research space.
- IHA could fill a gap to foster improved communication with government regulatory and policy entities in order to improve barriers to innovation.
- Promote scientific research and perspectives on key topics with government in order to address barriers to innovation and adoption.
- Assist food commodities to, as competitors, finding a common goal in the agriculture production- human health-environment space.
- Research and communication in identifying a "whole plate" related to benefits of specific nutrients and flexibility within the total dietary matrix.
    - Example – list all of the foods that provide sufficient quantities of a specific nutrient for defined human health targets.
    - Provide information on how to pair various commodities/food products to achieve nutrition target; make the best choices in an individual's diet.
    - Less interest in one food and more focus on how to eat overall for a balanced, nutritious diet and healthy lifestyle.
- IHA to be a neutral, trusted source of information.
- Where/if lacking, create the standards we need to foster trust in industry research.
- Give feedback into commodity research programs (e.g., research priorities) and continual efforts to improve scientific methodology.

- Integrative approach to facilitate urban and rural research and validating the metrics currently available.
- Generate metrics that incorporate important issues (e.g., greenhouse gas versus protein; are we measuring the right things?). Need common baseline metrics and collective continuous improvement.
- Behavioral and consumer research, including more research on sustainable nutrition (methods, definition, cultural, economic, other domains).
- Commodity groups want to continue to be part of the IHA conversations and dialogue.

CONCLUSIONS AND NEXT STEPS

Following the robust discussions of the workshop, Stover provided closing remarks to wrap up the session. Thanking all participants, he identified the next steps, noting that more workshops and engagement opportunities would be forthcoming.

Stover explained that this is the first workshop of many discussion opportunities. The IHA will continue to solicit input from production agriculture and all sectors across the food-ag value chain to continue learning about the needs, challenges, and opportunities in the space of agriculture and nutrition. Information gleaned during this workshop will be used to better inform the further development of IHA's research portfolio. This and future input from industry will help shape how the IHA fills gaps in agricultural research as it seeks to connect responsive agriculture, precision nutrition, and social and behavioral research (referred to as the healthy living hub within the IHA) to develop research and innovation aimed to improve human health.

Stover also noted that the work conducted during the workshop sets the stage for great collaboration in the future. IHA's foundational premise is that agriculture is the solution to improving human health for today and future generations. This can only be realized if the Institute is actively engaged with production agriculture as well as working together across the entire food-ag value chain.

Annex 1 Agenda

August 1-2, 2022

AGRICULTURE NUTRITION WORKSHOP

Hyatt Regency, DFW International Airport

Agenda

MONDAY, AUGUST 1

11:00 am **Sign In and Buffet Lunch**
Innovation Ballroom, Room AB, Lobby Level

12:00-12:15 pm **Welcome and IHA Overview**
Patrick Stover, Director of the IHA

12:15-12:20 pm **Responsive Agriculture Overview**
Elizabeth Parker, Interim Associate Director for Responsive Agriculture, Associate Director for International Programs and Strategic Initiatives

12:20 - 2:40 pm **Group 1 Industry Presentations**

- **Anne Osborne,** *Project Manager - National Wheat Foundation*
- **Erin Ball,** *Acting Executive Director - Grain Foods Foundation*
- **Keenan McRoberts,** *VP, Science & Program Strategy - United Soybean Board*
- **Samara Sterling,** *Nutrition Scientist, Research Director - The Peanut Institute*
  Darlene Cowart, *Corporate Food Safety Director - Birdsong Peanuts*
- **Julianna Gibson,** *Assistant Director of Marketing - American Pecan Council*
- **Carol Sloan,** *Health Research Director - California Walnut Board & Commission*
- **Margaret Lombard,** *CEO - National Honey Board*

2:40 - 3:00 pm **Coffee Break**

3:00 - 3:05 pm **Precision Nutrition Overview**
Regan Bailey, Associate Director for Precision Nutrition

3:05 - 5:05 pm **Group 2 Industry Presentations**

- **Mary Jo Feeney,** *Nutrition Consultant, Food & Agriculture Industries - The Mushroom Council*
- **Leslie Wada,** *Sr. Director of Nutrition & Health Research - U.S. Highbush Blueberry Council & the North American Blueberry Council*
- **Mitch Kanter,** *Chief Science Officer - Alliance for Potato Research & Education*
- **Stephanie Hodges,** *Consultant - International Fresh Produce Association*
- **Moises Torres-Gonzalez,** *VP, Nutrition Research - National Dairy Council*
- **Mitch Kanter,** *Chief Science Officer - Global Dairy Platform*

5:05 - 5:15 pm **Housekeeping**
Elizabeth Parker

5:15 - 6:15 pm **Free**

6:15 pm - **Depart From Hotel for Dinner at Joe T. Garcia's**
Transportation Provided

TEXAS A&M AGRILIFE | INSTITUTE FOR ADVANCING HEALTH THROUGH AGRICULTURE

August 1-2, 2022

AGRICULTURE NUTRITION WORKSHOP

Hyatt Regency, DFW International Airport

Agenda

TUESDAY, AUGUST 2

7:30 - 8:15 am **Breakfast**
Innovation Ballroom, Room AB, Lobby Level

8:15 -8:20 am **Day 2 Overview**
Elizabeth Parker

8:20 - 8:30 am **Healthy Living Overview**
Rebecca Seguin-Fowler, Associate Director for Healthy Living

8:30 - 10:30 am **Group 3 Industry Presentations**

- **Mark Arney,** *CEO - National Watermelon Promotion Board*
- **Mickey Rubin,** *VP, Research - American Egg Board, Executive Director - Egg Nutrition Center*
- **Kara Behlke Ungerman,** *Director of Nutrition - National Pork Board*
- **Allison Beadle,** *Wild Hive, Consultant - American Lamb Board*
- **Shalene McNeill,** *Executive Director, Nutrition Science, Health and Wellness - National Cattlemen's Beef Association*
- **Lanier Dabruzzi,** *Director of Food Innovation & Institutional Markets - United Sorghum Checkoff Board*

10:30 - 11:00 am
Coffee Break

11:00 - 12:30 pm
Breakout Session
Split into 2 groups

12:30 - 2:30 pm
Plenary Presentation and Discussion from Breakout Groups
Lunch will be provided at 1:00 pm to eat while continuing discussion

2:30 pm
Wrap-up and Next Steps
Patrick Stover

3:00 pm
Adjourn

TEXAS A&M AGRILIFE | INSTITUTE FOR ADVANCING HEALTH THROUGH AGRICULTURE

Annex 2: Speaker Bios

Mark Arney, Executive Director/CEO - National Watermelon Promotion Board

Mark Arney is the Executive Director/CEO for the Winter Springs, FL-based National Watermelon Promotion Board (NWPB). He has been with the Board for nearly 20 years. Mark directs and manages a professional staff that oversees operations, communications, marketing and research with the mission to increase the demand for watermelon year-round. Mark has had extensive experience in the produce industry having worked for USA Pears, Washington Apples, and was the CEO of the Michigan Apple Committee before leading the NWPB. Mark holds a BS in Food Science and an MBA from California Polytechnic State University. He's a veteran of the US Air Force obtaining the rank of Staff Sargent. He served as a medic and food inspector during his four-year deployment in Southeast Asia as well as stateside.

Allison Beadle, Founder and CEO - Wild Hive, Consultant - American Lamb Board

Allison Beadle, MS, RDN, is a marketing and communications professional and entrepreneur who combines passion for food and agriculture with expertise in communications and nutrition science. A driven leader, innovator, and connector, Allison draws on her commitment to excellence and relationships to drive business results.

As the founder and CEO of Wild Hive, a marketing and communications consulting firm specializing in food, agriculture, and nutrition, Allison leads a team of experts focused on designing and implementing game-changing strategies for food and agriculture clients. Wild Hive's clients include Texas A&M AgriLife, the Washington Red Raspberry Commission, the American Lamb Board, the Tri-Lamb Group, the National Mango Board, the National Watermelon Promotion Board, the Texas Pecan Board, the Texas Department of Agriculture, the United States Meat Export Federation, and the Mohair Council of America. Prior to launching Wild Hive, Allison was senior vice president for Fleishman Hillard, where she counseled numerous brands and commodity boards including the California Raisin Marketing Board, Paramount Farms (Wonderful Pistachios), Chobani, Texas Sweet Citrus Marketing, the National Mango Board, Sunsweet, the California Table Grape Commission, Potatoes USA, and the Texas Beef Council. Allison's marketing career began with the Central Market division of the H.E.B. Grocery Company where she led nutrition communications and education. At Central Market, she discovered her passion for food and agriculture storytelling and found that her background in nutrition science provided a strong foundation for building innovative and effective marketing strategies. Allison holds a bachelor's degree in nutrition science from Texas A&M University and a master's degree in nutrition science from Boston University. A member of the Academy of Nutrition and Dietetics (AND), she is past chair of the Food and Culinary Professionals (FCP) Dietetic Practice Group (DPG).

Kara Behlke-Ungerman, Director of Nutrition and Dietetics - National Pork Board

Kara Behlke-Ungerman is the director of nutrition and dietetics at the National Pork Board, headquartered in Clive, Iowa. In this role, she provides strategic direction and oversight for human nutrition, health, and well-being initiatives including Checkoff funded research projects, communications, and marketing. Additionally, she integrates agriculture, food, health and nutrition concepts into her work with both a consumer focus and science relevant perspective. Prior to National Pork Board, Behlke-Ungerman was employed with Schnuck Markets in a variety of positions: Director Health and Wellness Strategy; Associate Director Brand Strategy; Associate Director Brand Design Strategy Private Brands; Corporate Dietitian. She has also worked for Hy-Vee as a Registered Dietitian and the New York Beef Industry Council as the Director of Nutrition Education. Behlke-Ungerman is a member of the Academy of Nutrition and Dietetics and has been a member of the Retail Dietitian Business Alliance Advisory Board and CEOs Against Cancer. Behlke-Ungerman has a bachelor's in Dietetics from the University of Nebraska-Lincoln and has completed a dietetic internship at Yale Medical Center. Originally from Benkelman, Nebraska, Behlke-Ungerman currently resides in Des Moines, IA.

Darlene Cowart, Vice President Food Safety and Quality - Birdsong Peanuts

Dr. Darlene Cowart is Vice President of Food Safety and Quality for Birdsong Peanuts headquartered in Suffolk, VA. Birdsong Peanuts operates shelling plants in all three major peanut producing regions in the U.S. Her primary responsibility at Birdsong is the implementation and management of the food safety and quality systems for all regions. Darlene has spent her entire professional career in the peanut industry focusing on food safety and quality at all levels of the business. She is currently serving as Chairman of APSA Regulatory Compliance Committee, Chairman of the Research Committee of the Peanut Institute, board member for the Peanut Research Foundation of the American Peanut Council, and as a board member of the Peanut Standards Board appointed by the U.S. Secretary of Agriculture. Darlene received a bachelor's degree in Biology from Presbyterian College (1989), a Master's Degree in Horticulture from the University of Georgia (1991), and a Ph.D. in Food Science from the University of Georgia (1993).

Lanier Dabruzzi, Director of Food Innovation and Institutional Markets - United Sorghum Checkoff Board

Lanier Dabruzzi, MS, RD, LD, is the Director of Food Innovation and Institutional Markets for the United Sorghum Checkoff Program. In this role, she is responsible for increasing the use of sorghum in the U.S. food supply as an ingredient and stand-alone product, as well as providing marketing and education to a variety of audiences. Prior to joining the Sorghum Checkoff in late 2021, Dabruzzi served as the Assistant Director of Food & Nutrition Outreach for The Dairy Alliance, regional affiliate of the National Dairy Council. With a passion for agriculture and nutrition communication, she has worked with a variety of commodity food groups throughout her career, including dairy, beef and almonds, regularly appearing on radio, television and in print media. Dabruzzi is a member of and

has served on the boards of the Food and Culinary Professionals Dietetic Practice Group with the Academy of Nutrition and Dietetics and the Georgia Academy of Nutrition & Dietetics. She received her Bachelor of Science from the University of Southern California in Health Promotion and Disease Prevention, her Master of Science from the University of Tennessee in Nutrition Science and completed her dietetic internship at Emory University Hospitals.

Mary Jo Feeney, MS, RDN, FADA, FAND, Nutrition Consultant, Food & Agriculture Industries - The Mushroom Council

Mary Jo Feeney specializes in nutrition communications, marketing and coordination of nutrition research activities. During her career as a nutrition professional, she has taught health care professionals, served as a technical writer, author, project manager and association manager. Mary Jo is recognized as a leading consultant to the food and health care industries, and often presents at professional symposia. The Nutrition Advisor to the California Prune Board from 1997 – 2022, currently, she serves as nutrition research coordinator/consultant to the Mushroom Council and the American Pistachio Growers Association. Mary Jo received her Masters in Nutrition concurrently with her Dietetic Internship from Case-Western Reserve University, University Hospitals, Cleveland, Ohio. She received that institution's 1991 Alumna of the Year Award. A registered dietitian nutritionist, Mary Jo is a charter Fellow of the American Dietetic Association (now the Academy of Nutrition and Dietetics), having earned this certification upon rigorous examination of practice leadership and professionalism. She served on the Board of Directors of both the Academy of Nutrition and Dietetics (AND) and its Foundation. She is a past recipient of the Academy's Medallion Award and was a member of the Academy's 2007-08 Strategic Planning Task Force. She is also a member of the American Society for Nutrition. Her publications include research articles including the "Positive effect of white button mushrooms when substituted for meat on body weight and composition changes during weight loss and weight maintenance – A 1 year randomized clinical trial" published in Appetite. She is among several authors of the proceedings from the Mushrooms and Health Summit published in the Journal of Nutrition, and among the authors of the proceedings from the Experimental Biology symposium on "Pairing nuts and dried fruit for cardiometabolic health" (Nutrition Journal 2016) and the article in Plants 2022, entitled "Pistachio Nuts (Pistacia vera L.): Production, Nutrients, Bioactives and Novel Health Effects." A sports enthusiast, she has completed twelve marathons including the competitive 100th anniversary running of the Boston Marathon in April, 1996. She lives in the San Francisco Bay Area with her husband, several cats and collies.

Julianna Gibson, Assistant Director of Marketing - American Pecan Council

Julianna Gibson hales from the Coachella Valley where her family has a deep-rooted history in the California Date industry. Additionally, she grew up spending time on her family's ranches in southeastern Arizona and New Mexico assisting her parents in planting their now established pecan orchard in Cochise County. A graduate of Pepperdine University with a degree in Integrated Marketing Communication, Julianna established a career in media and outreach through writing for

regional travel and lifestyle publications. In her role as the Assistant Director of Marketing and Industry Relations at the American Pecan Council, Julianna has had the privilege of helping to establish and oversee the health and nutrition marketing and communications program for the newly formed Federal Marketing Order.

Stephanie Hodges, Consultant - International Fresh Produce Association

Stephanie Hodges (MS, MPH, RDN) is a public health dietitian and consultant with the International Fresh Produce Association. She is the founder and owner of The Nourished Principles, a public health and nutrition consulting firm where she works with clients to implement strong public health nutrition programs and policies, write and implement grants, strengthen nutrition and wellness within school districts, and engage and inform consumers on nutrition, and public health topics. She has been quoted in national nutrition and health media outlets including Healthline and the Huffington Post and appears regularly on podcasts and local news segments to share public health and nutrition information. Stephanie earned a Master of Science in Food Policy & Applied Nutrition and a Master of Public Health from Tufts University. She holds a Bachelor of Science in Human Nutrition, Foods & Exercise from Virginia Tech and she completed her Dietetic Internship at the Medical University of South Carolina.

Mitch Kanter, Chief Science Officer - Alliance for Potato Research and Education; Chief Science Officer - Global Dairy Platform

Mitch Kanter, PhD serves as the Chief Science Officer for the Global Dairy Platform (GDP), a position he has held since December 2018. GDP leads a global collaboration of dairy companies, associations, scientific partners, and others to demonstrate the role of dairy in a healthy diet, as well as the dairy sector's commitment to sustainable food production. Dr. Kanter has worked in the healthy food and beverage industry as well as the agricultural sector for over 30 years, serving in diverse roles for various multinational companies, including Director of The Gatorade Sports Science Institute and Director of Nutrition Science & Scientific Communications for the Quaker Oats Company; Director of Nutrition Research for General Mills; Discovery Director, Director of Venturing, and Senior Research Fellow for Cargill, and Chief Science Officer for the Alliance for Potato Research & Education (APRE). Dr. Kanter has also served as the Executive Director of the American Egg Board and as Chief Science Officer for FoodMinds. Dr. Kanter holds BS and MS degrees from Queens College in New York City, as well as MS and PhD degrees from the Ohio State University. He served as an NIH Postdoctoral Research Fellow in the Preventive Medicine Dept. at the Washington University School of Medicine after receiving his PhD, and spent four years as an assistant professor at Northeastern Illinois University and Rush Medical School after graduation. He currently holds an Adjunct Associate Professorship at the University of Minnesota.

Margaret Lombard, CEO - National Honey Board

Margaret Lombard is the Chief Executive Officer for the National Honey Board, a research and

promotion board dedicated to increasing awareness, appreciation, and consumption of honey in the United States. Before joining the board in 2015, Margaret spent her career working in the food industry specializing in marketing perishables, fresh fruits and vegetables. She has worked on both the client and the agency side of the business. She earned her undergraduate degree from the University of California Davis and her MBA from California State University Sacramento. Margaret and her husband Stephen have three grown daughters and four grandchildren. In her spare time, she loves to cook and explore the world through culinary travel.

Shalene McNeill, Executive Director, Nutrition Science, Health and Wellness - National Cattlemen's Beef Association

Shalene H. McNeill, Ph.D., RD, is the Executive Director of Nutrition Science, Health and Wellness for the National Cattlemen's Beef Association. In her role, she leads research and science communications on beef's role in healthy, active lifestyles. For nearly 20 years, Dr. McNeill has been dedicated to researching and applying evidence on the importance of nourishing, wholesome foods through numerous authored publications and a multitude of feature stories and guest commentaries. Dr. McNeill values science-based communication and works diligently to promote healthier lifestyles. She has contributed her expertise and insights to several audiences including nutrition scientists, fitness professionals, the media and the agriculture community. As a life-long Texan who grew up in agriculture, Dr. McNeill considers it a privilege to work on behalf of America's farmers and ranchers. She chooses to live in a rural community where her children are learning and being shaped by agricultural values such as stewardship, dedication and accountability. Dr. McNeill is a registered dietitian and holds a bachelor's degree in biomedical science and a doctorate in human nutrition, both from Texas A&M University.

Keenan McRoberts, VP, Science and Program Strategy - United Soybean Board

As Vice President – Science and Program Strategy, Keenan develops, leads and facilitates USB's meal strategic direction. He works to ensure high impact and returns on strategic investments throughout the USB investment portfolio. Raised on a farm and ranch in western Nebraska, Keenan is passionate about farmer-driven investments that can help shape the future of the U.S. soybean industry. He received his bachelor's in biochemistry from the University of Nebraska – Lincoln, and went on to earn both his master's in international agriculture and rural development and Ph.D. in animal science from Cornell University. Prior to joining USB, Keenan was the Director of Global Strategy and Business Development at the American Soybean Association's WISHH program. He also worked with the U.S. Peace Corps in Nicaragua as an agricultural extension specialist, technical specialist and trainer.

Anne Osborne, Project Manager - National Wheat Foundation

Anne Osborne has worked in North Dakota in agriculture for 30 years. Her experience includes crop protection sales, inside sales, and customer service with DuPont Company. Osborne has also served

and held leadership positions on many boards and committees such as North Dakota Corn Growers, Advanced Crop Advisors Workshop Committee, Ag in the Classroom, and Board of Pensions for the Dakotas United Methodist Church. She has also worked directly with growers on seed, fertilizer, crop inputs and services in ag retail for several years. Anne has a Bachelor of Science Degree in Agriculture Education from Montana State University.

Mickey Rubin, *Vice President, Research - American Egg Board, Executive Director - Egg Nutrition Center*

Mickey Rubin, PhD is Vice President of Research at the American Egg Board, and Executive Director of American Egg Board's Egg Nutrition Center. The American Egg Board is the national research, education, and promotion checkoff program for U.S. egg farmers. AEB is home to the Egg Nutrition Center—the acknowledged leader in research and education related to eggs. Dr. Rubin oversees American Egg Board's scientific research in the areas of sustainability and human nutrition. Dr. Rubin began his career in the food industry at Kraft Foods and later served as Vice President of Nutrition Research at National Dairy Council before moving to the American Egg Board in 2018.

Carol Sloan, Health Research Director - California Walnut Board and Commission

Carol Sloan is a registered dietitian/nutritionist and consultant with expertise in food and nutrition communications and food service management. Carol is the Health Research Director for the California Walnut Commission where she leads project implementation and oversees research studies internationally and domestically. Carol collaborates with the public relations and marketing departments to translate this scientific research for broader audiences, including consumers and health professionals. She is also a freelance journalist specializing in delivering scientifically sound, realistic information about food, nutrition and health. She is nutrition consultant to several healthcare facilities in southern California and is a member of the Bayer Crop Science Leaders Engaged in Advancing Dialogue (L.E.A.D.) Initiative. She is currently the editor of the Nutrition Education for the Public Dietetic Practice Group newsletter. She received both the Excellence in Private Practice, Business & Communications Award and the Distinguished Service Award from the California Academy of Nutrition and Dietetics and the 2022 Outstanding Member Award from the Nutrition Education for the Public Dietetic Practice Group. Carol serves as a preceptor to the Individualized Supervised-Practice Pathway Program at California State University, San Bernardino and the master's dietetic internship at California State University, Long Beach.

Samara Sterling, Research Nutrition Director - The Peanut Institute

Dr. Samara Sterling is a Nutrition Scientist and Health Communicator with expertise in the use of plant-based nutrition for the prevention and management of chronic diseases. She serves as the Research & Nutrition Director for The Peanut Institute where she leads scientific affairs, research protocols, grant management, media health communication, and is actively involved in regulatory issues and nutrition policy. In her role, Dr. Sterling manages the research funded by The Peanut Institute and develops study aims surrounding peanut nutrition. She is also a principal investigator

and director for clinical nutrition and lifestyle interventions focused on addressing issues surrounding nutrition and health equity. She has served as nutrition consultant for multiple community-based projects, examining strategies to improve health in at-risk communities. She regularly speaks for both national and international audiences and is passionate about translating science into consumer-friendly messages. She is described as a natural leader and mentor with the ability to engage patients, research participants, and community members in ways that motivate them to make changes in their health.

Moises Torres-Gonzalez, VP, Nutrition Research - National Dairy Council

Dr. Moises is Vice President of Nutrition Research at National Dairy Council (NDC). At NDC he serves as the subject matter expert (SME) on dairy foods and chronic diseases of great public health concern, e.g. heart disease, stroke, type 2 diabetes, hypertension, etc. As SME lead, his main role is to strategically define, develop and manage the research needed to build our scientific understanding about the role dairy foods, including whole-fat dairy foods, play as part of dietary patterns aimed to reduce the risk of chronic diseases and to help maintain optimal human health. Additionally, Moises's work includes to advance the science and our understanding on the potential health benefits of milk fat ingredients that could lead to new discoveries and stimulate product innovation that could ultimately be translated to new business opportunities. Dr. Moises earned his bachelor's degree in Biochemical Engineering with major in biotechnology and food sciences at the Instituto Tecnologico de Colima, Mexico. He later obtained a Master's degree in Biochemical Engineering at the Instituto Tecnologico de Veracruz, in Mexico. He earned an additional Master's degree as well as a Doctoral' s degree in Nutritional Sciences at the University of Connecticut, USA. Dr. Moises possesses a strong research and educational background on lipid and macronutrient metabolism and, overall in human nutrition and its implications with cardiometabolic diseases (e.g. cardiovascular diseases, type 2 diabetes, obesity and metabolic syndrome); his research experience also comprises areas of food sciences, processing of vegetable oils as well as mitochondrial DNA damage and its connection with mitochondria and cardiac dysfunction. Dr. Moises has authored and co-authored more than 20 peer-reviewed scientific articles and has written book chapters in the area of dairy foods and human health. Additionally, he previously held research scientific positions at the Linus Pauling Institute at the Oregon State University, and at the School of Medicine at the University of California in San Diego. He is active member of scientific organizations such as the American Society for Nutrition, American Oil Chemistry Society, International Society for Atherosclerosis among others.

Leslie Wada, Sr. Director of Nutrition & Health Research - U.S. Highbush Blueberry Council & the North American Blueberry Council

Leslie Wada is a registered dietitian with an undergraduate degree in nutrition and dietetics from the University of California, Davis and a Ph.D. in nutritional sciences from the University of California, Berkeley. She worked as a research scientist on nutrition studies and taught classes in dietetics at UC Berkeley before leaving academia to work with companies that developed functional foods and

ingredients. She has 20 years of experience working as an independent consultant for companies in the food and agriculture industry, and recently joined the USHBC/NABC as the Senior Director of Nutrition and Health Research at the US Highbush Blueberry Council (USHBC). She manages the USHBC's multi-million-dollar pipeline of health research projects and leads the health and nutrition pillar of the USHBC's 2021-2025 strategic plan, integrating the research projects and results with the council's overall strategy in marketing and promotions.

Annex 3: Participant List

1. Mike Adams, MS
   Royalty Pecan Farms
   Texas Pecan Growers Association
   Chair, American Pecan Council
   10600 State Hwy 21 E
   Caldwell, TX 77836
   (PH): 979-846-3285
   (Cell): 903-649-2077
   bmichaeladams@gmail.com
   https://royaltypecans.com/
   https://tpga.org/
   https://americanpecan.com

2. Mark Arney, MBA (Speaker)
   Executive Director/CEO
   National Watermelon Promotion Board
   1321 Sundial Point
   Winter Springs, FL 32708
   (Cell): 407-312-9792
   marney@watermelon.org
   www.watermelon.org

3. Regan Bailey, PhD, MPH, RD (Speaker)
   Associate Director, Institute for Advancing Health Through Agriculture
   Professor of Nutrition
   Texas A&M AgriLife Research | Texas A&M University System
   1500 Research Parkway
   Centeq Building B, Suite 270
   College Station, TX 77845
   (PH): 979-314-3280
   Fax: 979-845-2704
   Regan.Bailey@ag.tamu.edu
   www.iha.tamu.edu

4. Deborah (Deb) Ballance
   Owner, Legacy Farms Inc.
   Board Member, National Pork Board (NPB)
   604 Benton Pond Rd
   Fremont NC 27830
   (PH): 919-273-3349
   deb@legacyfarmsinc.com

5. Kendall Bassett
   Outreach Specialist
   Texas A&M AgriLife Institute for Advancing Health Through Agriculture
   Texas A&M AgriLife Research | Texas A&M University System
   (PH): 979-314-3415
   Kendall.Bassett@ag.tamu.edu
   www.iha.tamu.edu

6. Allison Beadle, MS, RDN (Speaker)
   Founder & CEO, Wild Hive
   Consultant, American Lamb Board
   Wild Hive PH: 512-963-6930
   allison.beadle@wildhive.com
   https://www.wildhive.com/

   American Lamb Board
   (PH): 303-759-3001
   6300 E. Yale Ave., Suite 110 Denver, CO 80222
   https://www.americanlamb.com/
   info@americanlamb.com

7. Kara Behlke-Ungerman, RDN, LD (Speaker)
   Director of Nutrition and Dietetics
   National Pork Board
   1776 NW 114th Street
   Des Moines, IA 50325
   (PH): 515-223-3441
   kbehlke@pork.org
   https://www.pork.org/

8. Darby Campsey
   Director of Communications and Producer Relations
   Texas Wheat Producers Board and Association
   5405 W I-40
   Amarillo, TX 79106
   (PH): 806-352-2191
   darby@texaswheat.org
   www.texaswheat.org
   www.facebook.com/texaswheat
   Twitter.com/texaswheat

9. Darlene Cowart, PhD (Speaker)
   Vice President Food Safety and Quality
   Birdsong Peanuts
   198 North Bay Street
   Blakely, Georgia 39823-0650
   (PH): 229-723-3641
   dcowart@birdsongpeanuts.com
   https://www.birdsongpeanuts.com/

10. Lanier Dabruzzi, MS, RD, LD (Speaker)
    Director of Food Innovation & Institutional Markets
    United Sorghum Checkoff Program
    4201 N. Interstate 27
    Lubbock, TX 79403
    (Office): 806-687-8727
    (Cell): 404-354-1750
    lanier@sorghumcheckoff.com
    www.SorghumCheckoff.com

11. Cindy Davis, PhD
    National Program Leader for Human Nutrition
    Agricultural Research Service, USDA
    5601 Sunnyside Avenue
    Beltsville, Maryland 20705-5138
    (Cell): 202-313-2355
    Cindy.Davis2@usda.gov

12. Alexandra Deges
    Industry and Government Relations Coordinator
    Texas Cattle Feeders Association
    5501 Interstate 40 West
    Amarillo, TX 79106
    (Main): 806-358-3681
    alexandra@tcfa.org
    https://www.tcfa.org/

13. Bret Erickson
    Sr. VP Business Affairs
    Little Bear Produce
    7310 N. Expressway 281
    P.O. Box 1548
    Edinburg, TX 78542
    (Office): 956-380-0353
    (Cell): 956-457-7364
    berickson@littlebearproduce.com
    www.littlebearproduce.com

14. JC Essler
    Executive Vice-President
    Texas Poultry Federation
    595 Round Rock West Drive #305
    Round Rock, TX 78681
    (Office): 512-248-0600
    (Cell): 979-450-6771
    jcessler@texaspoultry.org
    www.texaspoultry.org

15. Mary Jo Feeney, MS, RDN, FADA, FAND (Speaker)
    Consultant to the Food & Agriculture Industries, Mushroom Council
    11030 Mora Dr.
    Los Altos Hills, CA 94024
    (PH): 650-941-6085
    mj@feeney.us.com
    Mushroom Council
    200 NE Missouri Road, Suite 200 Lee's Summit, MO 64086
    (PH): 816-251-4512
    https://www.mushroomcouncil.com/
    info@mushroomcouncil.com

16. Hannah Fuerniss, MS, RD, LD
    Manager, Nutrition and Health
    Texas Beef Council
    8708 North FM 620
    Austin, TX 78726
    (PH): 512-335-2333
    hannah@txbeef.org
    https://www.texasbeefcheckoff.com/

17. Maggie S. Gentile, MS, RD, LD
    Vice President of Food and Nutrition Policy and Partner
    Food Directions, LLC
    Consultant, National Turkey Federation
    (PH): 630-878-1461
    maggiesommers@fooddirectionsdc.com
    https://fooddirectionsllc.com/

    National Turkey Federation
    1225 New York Avenue NW, Ste 400
    Washington, DC 20005
    (PH): 202-898-0100
    https://www.eatturkey.org/

18. David Gibson
    Executive Director
    Texas Corn Producers
    4205 N. Interstate 27
    Lubbock, TX 79403
    (PH): 806-763-2676
    dgibson@texascorn.org
    https://texascorn.org/
    https://texascorn.org/growing-opportunities/checkoffs/

19. Julianna Gibson (Speaker)
    Assistant Director of Marketing
    American Pecan Council
    3880 Hulen Street, Suite 650
    Fort Worth, TX 76107
    (PH): 817-916-0020
    Fax: 866-232-0085
    jgibson@americanpecan.com
    info@americanpecan.com
    https://americanpecan.com

20. Jose Gomez PhD
    Importer
    Chairman, National Watermelon Promotion Board Research Committee
    6741 Pearl Ridge Dr, El Paso, TX, 79912
    (PH): 915-219-5201
    agrologisticsinc@gmail.com

21. Stephanie Hodges, MS, MPH, RDN (Speaker)
    Consultant, International Fresh Produce Association (IFPA)
    Charleston, SC
    (PH): 540-420-0116
    stephanie@thenourishedprinciples.com
    IFPA
    1901 Pennsylvania Ave., NW Ste 1100 Washington, DC 20006 (PH): 202-303-3403
    https://www.freshproduce.com/

22. Mitch Kanter, PhD (Speaker)
    Chief Science Officer
    Alliance for Potato Research and Education (APRE) PO Box 803312
    Chicago, IL 60680
    (PH): 312-248-8861
    research@apre.org
    https://apre.org/
    Chief Science Officer
    Global Dairy Platform
    10255 West Higgins Road, Ste 820 Rosemont, IL 60018-5616
    (PH): 847-627-3384
    (Cell): 612-819-6346
    mitch.kanter@globaldairyplatform.com
    https://www.globaldairyplatform.com https://www.globaldairyplatform.com/nutrition/

23. Megan Lacy
    Consultant, Wild Hive
    Institute for Advancing Health Through Agriculture
    Texas A&M AgriLife Research | Texas A&M University System
    (PH): 936-499-6860
    megan.lacy@wildhive.com

24. Juan A. Landivar, PhD
    IHA Internal Scientific Advisory Committee member
    Professor & Center Director
    Texas A&M AgriLife Research and Extension Center, Corpus Christi
    (Main): 361-265-9201
    (Direct): 361-698-7404
    (Cell): 361- 877- 3471
    Juan.Landivar@ag.tamu.edu

25. Margaret Lombard, MBA (Speaker)
    CEO
    National Honey Board
    P.O. Box 780
    Erie, CO 80516
    (PH): 303-776-2337
    margaret@nhb.org
    https://honey.com/

26. Vi Luong, MS
    Program and Operations Manager - Healthy Living
    Texas A&M AgriLife Institute for Advancing Health Through Agriculture
    Texas A&M AgriLife Research | Texas A&M University System
    17360 Coit Rd.
    Dallas, TX 75252
    vi.luong@ag.tamu.edu
    AgriLife Healthy Living
    www.iha.tamu.edu

27. Alexandra (Lexi) MacMillan Uribe, PhD, RDN
    Assistant Professor - Healthy Living
    Institute for Advancing Health Through Agriculture
    Texas A&M AgriLife Research | Texas A&M University System
    17360 Coit Rd
    Dallas, TX 75252
    (PH): 972-952-9275
    macmillanuribe@ag.tamu.edu
    AgriLife Healthy Living
    www.iha.tamu.edu

28. Brian May, PhD
    Government Relations
    Texas A&M University
    P.O. Box 61574
    San Angelo, TX 76906
    brian.may468@gmail.com
    (PH): 325-656-4768

29. Shalene McNeill, PhD, RD (Speaker)
    Executive Director, Nutrition Science, Health and Wellness
    National Cattleman's Beef Association
    9110 E. Nichols Ave., Ste 300
    Centennial, CO 80112
    (Cell): 830-570-1240
    smcneill@beef.org
    https://www.ncba.org/
    https://www.beefboard.org/checkoff/resources/

30. Keenan McRoberts, PhD (Speaker)
    Vice President, Science & Program Strategy
    United Soybean Board
    16305 Swingley Ridge Road, Ste 150
    Chesterfield, MO 63017
    (Cell): 443-469-0176
    kmcroberts@unitedsoybean.org
    https://www.unitedsoybean.org/
    https://www.soybeanresearchdata.com/

31. Shelly Nutt
    Executive Director
    Texas Peanut Board
    1821 N. Lake Forest Dr., Ste 700-323
    McKinney, TX 75071
    (PH): 806-632-5350
    shelly@texaspeanutboard.com
    https://texaspeanuts.com/

32. Anne Osborne (Speaker)
    Project Manager
    National Wheat Foundation
    25 Massachusetts Ave, NW, Ste 500B
    Washington, DC 20001
    (PH): 701-368-9815
    (Cell): 701-368-9815
    aosborne@wheatworld.org
    https://wheatfoundation.org/

33. Elizabeth Parker, DVM (Speaker)
    Associate Director, International Programs and Strategic Initiatives
    Interim Director Responsive Agriculture Hub
    Institute for Advancing Health Through Agriculture
    Texas A&M AgriLife Research | Texas A&M University System
    Centeq Building B
    1500 Research Parkway, Suite 270
    College Station, TX 77845
    Main Office: +1 (979) 314-3280
    Direct: +1 (979) 314-8198
    FAX: +1 (979) 845-2704
    Elizabeth.Parker@ag.tamu.edu
    www.iha.tamu.edu

34. Hawley Poinsett, MS, RDN, LD
    Founder and CEO
    Let's Love Food Again
    Texas Beef Council
    (Cell): 512-468-3810
    hawley@letslovefoodagain.com

35. Arin Rose Reeder, MA
    Assistant Director, Operations
    Institute for Advancing Health Through Agriculture (IHA)
    Texas A&M AgriLife Research | Texas A&M University System
    1500 Research Parkway
    Centeq Building B, Suite 270 College Station, TX 77845
    (PH): 979-314-3407
    Arin.Reeder@ag.tamu.edu
    www.iha.tamu.edu

36. Chad Rethorst, PhD
    Associate Professor - Healthy Living
    Institute for Advancing Health Through Agriculture (IHA)
    Texas A&M AgriLife Research| Texas A&M University System
    (PH): 972-952-9625
    AgriLife Healthy Living
    www.iha.tamu.edu

37. Joseph (Joe) O. Rich, PhD
    Associate Director, Plains Area
    US Department of Agriculture, Agricultural Research Service
    2150 Centre Ave, Bldg D, Suite 300
    Fort Collins, CO 80526-8119
    (PH): 970-492-7056
    (Cell): 970-219-9044
    Fax: 970-492-7065
    joseph.rich@usda.gov

38. Mickey Rubin, PhD (Speaker)
    Vice President, Research, American Egg Board
    Executive Director, Egg Nutrition Center
    8755 West Higgins Road, Ste 300
    Chicago, IL 60631
    (PH): 224-563-3720
    mrubin@eggnutritioncenter.org
    https://www.incredibleegg.org/

39. Ben Scholz
    Board Member, Texas Wheat
    Board Member, Texas Wheat Producers Association
    dba B Scholz Farms
    Farm/Office 301 Boyd Ct
    Home 605 Lake Vista Ln
    Lavon, TX 75155
    (PH): 214-534-9176
    producerscompress@sbcglobal.net

40. Rebecca A. Seguin-Fowler, PhD, RD, LD, CSCS (Speaker)
    Associate Director, Institute for Advancing Health Through Agriculture (IHA)
    Chief Scientific Officer, Healthy Texas Institute
    Texas A&M AgriLife Research | Texas A&M University System
    1500 Research Parkway, Centeq Building B
    College Station, TX 77845
    (PH): 979-845-2142
    AgriLife Healthy Living
    www.iha.tamu.edu

41. Dustin Sherer
    Director, Government Affairs
    American Farm Bureau Federation (AFBF)
    American Farm Bureau Federation®
    600 Maryland Ave SW Suite 1000W
    Washington, DC 20024
    (PH): 202-406-3670
    dustins@fb.org
    https://www.fb.org

42. Carol Sloan, RDN, FAND (Speaker)
    Health Research Director
    California Walnut Board & Commission
    101 Parkshore Drive, Ste 250 Folsom, CA 95630
    (D): 562-221-9869
    (PH): 916-932-7070
    csloan@walnuts.org
    https://walnuts.org
    https://walnuts.org/nutrition/health-research-program/

43. Pamela (Pam) Starke-Reed, PhD
Deputy Administrator, Nutrition, Food Safety and Product Quality/New Uses
ARS Ethics & Scientific Integrity Officer
Agricultural Research Service, USDA
George Washington Carver Center
5601 Sunnyside Avenue, Room 2-2112
Beltsville, Maryland 20705-5138
(PH): 301/504-4788
Pamela.Starke-Reed@USDA.GOV

44. Samara Sterling, PhD, MSc (Speaker)
Research & Nutrition Director
The Peanut Institute
P.O. Box 70157
Albany, GA 31708
(PH): 299-888-216 ext 312
ssterling@peanut-institute.com
https://peanut-institute.com/
https://peanut-institute.com/research-library/

45. Patrick Stover, PhD (Speaker)
Director
Institute for Advancing Health Through Agriculture
Texas A&M AgriLife Research | Texas A&M University System
1500 Research Parkway
Centeq Building B, Suite 270
College Station, TX 77845
(PH): 979-314-3280
Fax:979-845-2704
Patrick.Stover@ag.tamu.edu
Twitter @patrickjstover
www.iha.tamu.edu

46. Moises Torres-Gonzalez, PhD (Speaker)
Vice President, Nutrition Research
National Dairy Council
10255 W. Higgins Rd. Suite 900
Rosemont, Illinois 60018-5616
(PH): 847-627-3275
moises.torres-gonzalez@dairy.org
UndeniablyDairy.org
https://www.usdairy.com/about-us/national-dairy-council

47. Darren Turley
    Texas Association of Dairymen
    Executive Director
    P.O. Box 13182
    Austin, TX 78711
    (PH): 817-410-4538
    dturley@milk4texas.org
    https://milk4texas.org/

48. Leslie Wada, PhD, RD (Speaker)
    Senior Director of Nutrition & Health Research
    U.S. Highbush Blueberry Council
    North American Blueberry Council
    81 Blue Ravine Road, Ste 110
    Folsom, CA 95630
    (PH): 916-461-2434
    lwada@blueberry.org
    https://ushbc.blueberry.org/
    https://healthprofessionals.blueberry.org/research/

49. Tommy Wilkins
    Producer, Grow Farms Texas
    Vice Chair, Texas International Produce Association
    10700 S Sugar Rd
    Pharr, TX 78577
    (Cell): 806-790-6114
    tommy@growfarmstx.com
    https://texipa.org/

50. Ross Wilson
    Texas Cattle Feeders Association
    5501 Interstate 40 West
    Amarillo, TX 79106
    (Main): 806-358-3681
    ross@tcfa.org
    https://www.tcfa.org/

51. Larry Womack
    Producer
    President Texas Pecan Board, Chairman National Pecan Federation
    Council member - American Pecan Council
    Member – Texas Peanut Producers Board
    4025 State Hwy 6
    De Leon TX76444
    (PH): 254 893 6497
    (Cell): 806 445 6497
    ldwomack1961@gmail.com
    https://tpga.org/

52. Jennifer Yezak
    Assistant Vice Chancellor for Federal Relations
    Texas A&M AgriLife
    1747 Pennsylvania Avenue, NW, Suite 400
    Washington, D.C. 20006
    (PH): 202-684-9932
    (Cell): 202-607-4309
    Jennifer.Yezak@ag.tamu.edu

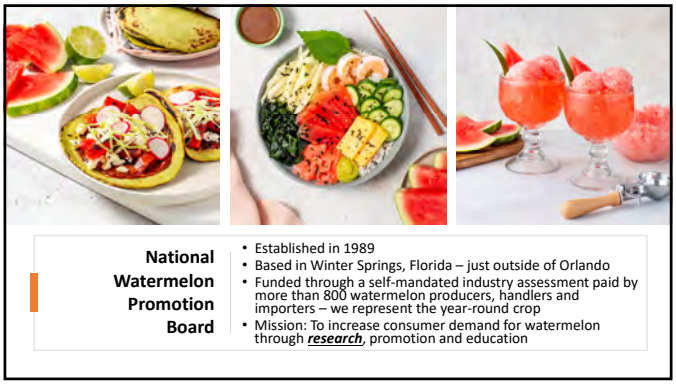
Annex 4: Presentations

Available upon request:

Keenan McRoberts, United Soybean Board - kmcroberts@unitedsoybean.org

1. Arney, Mark

1



2

3

4

5

6

What Do We Tell Consumers?

- Watermelon is 92% water, making it a delicious way to rehydrate
- A nutrient-rich two cup serving of watermelon has:
  - 80 calories
  - No fat
  - Vitamin A (8%)
  - Vitamin B6 (6%)
  - Vitamin C (25%)
  - Potassium (6%)
  - Magnesium (6%)
  - Thiamin (8%),
  - Phosphorus (2%)

7

8

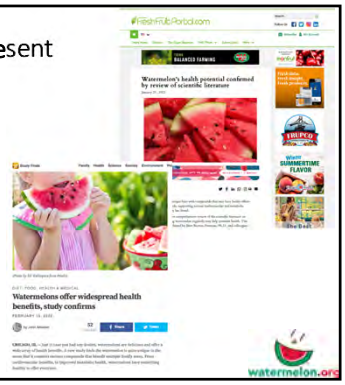
Previous Nutrition Research Project Topics

- Lycopene
- Citrulline
- Cardiovascular
- Exercise & Athletic Performance
- Satiety
- Digestive Health
- Inflammation
- Cancer

9

Nutrition Research 2020-Present

- Projects were cancelled or rescheduled in 2020 and 2021
- September 2020 funded *Summary of Research: Database and Research Paper for Watermelon*
  - Resulting paper was published in December 2021 in *Current Atherosclerosis Reports*
  - Press release: *Scientific Literature Review Confirms Watermelon's Health Potential* released in January 2022
  - Study was also used to update the Board's Nutrition Research RFP in December 2021



10

Nutrition Research Project Approval Process

Strategic Process to Identify New Projects

1. *Summary of Research: Database and Research Paper for Watermelon* study insights used to update the direction of the Nutrition Research Program
2. Updated the Nutrition Research Areas of Interest in the RFP
3. Formal RFP Process in December and January of each year
4. Staff & Third Party Analysis provide Committee recommendations in January
5. Committee recommends the program to the Board in February

11

RFP Research Areas of Interest

Specific areas of nutrition and health research interest include:

- NHANES Analysis
- Cardio metabolic Health
- Cognitive Function
- Gastrointestinal Health
- Other Areas:
  - Emerging areas of interest, such as skin health or cognitive health
  - Impact on the health of special populations, such as athletes, children, and older individuals

12

Dose Response Effect of Watermelon Consumption on Ambulatory Blood Pressure in Adults with Pre-hypertension: A Randomized Controlled Pilot Trial – Illinois Institute of Technology

- The primary goal of the project is to evaluate the dose-response effects of watermelon flesh in regulating blood pressure in individuals with pre-hypertension. (Study type: Human)
- The working hypothesis is that watermelon being a unique source of various bioactive components including L-citrulline (signature compound), arginine and polyphenols, possesses vaso-dilatory activity and will help to regulate blood pressure in individuals at risk of developing hypertension.
- In addition, they hypothesize that watermelon intake will enhance NO bioavailability, which will help to improve metabolic markers, lipid profile nitrite/nitrate content, arginine/ADMA ratio in humans.

watermelon.org

13

Evaluating the association of watermelon consumption with nutrient intake, diet quality, and physiological parameters in children and adults – Nutrition Impact LLC

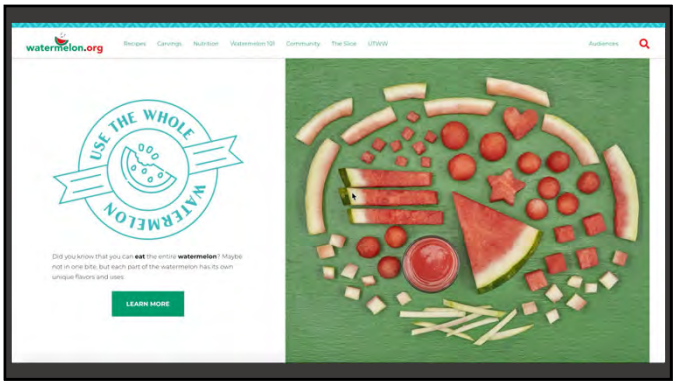
- The objective of this study is to determine intake of watermelon and assess association with diet quality, energy and nutrient intake, and physiological parameters in children and adults (Study type: National Health and Nutrition Examination Survey).
- Determine intake of watermelon of children 2-18 years of age(y) and adults 19+ y and trends in intake over time (from 2001 through 2018).
- Assess energy and nutrient intake of child and adult watermelon consumers compared to non-consumers.
- Determine whether diet quality, measured with the Healthy Eating Index 2015, of watermelon consumers is higher compared to non-consumers.
- Assess whether relationships between watermelon consumption and physiological parameters including cardiovascular and anthropometric risk factors exist.

14

Targeted Media Relations to Promote Results of Studies – Wild Hive

- Leverage the results of published research studies through targeted media relations to promote the results of the studies
  - Distribution of the press release through newswire services which reach a broad range of consumer media as well as health and science journalists (such as PR Newswire and EurekAlert!)
  - Targeted pitching to health and science journalists and nutrition influencers to drive awareness of the research study(ies)

15



16

National Watermelon Promotion Board Research Program

Mark Arney, Executive Director
Institute for Advancing Health Through Agriculture
Agriculture Nutrition Workshop
August, 2022
Dallas, TX

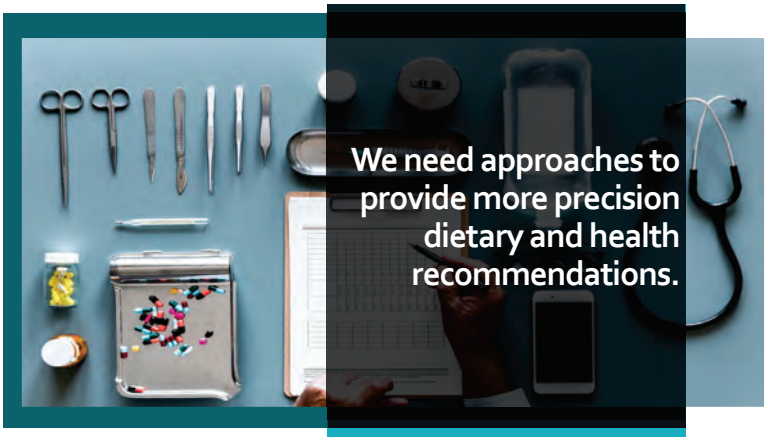
17

2. Bailey, Regan

Institute for Advancing Health Through Agriculture Research Initiatives: Precision Nutrition

Regan Bailey, PhD, MPH, RD
Associate Institute Director

Texas A&M AgriLife Research



Precision Nutrition: *Advancing human, environmental, and economic health*

Vision

Create a core of key leaders and research teams in the precision nutrition and translational research space to transform the way in which dietary recommendations are given, ultimately reducing chronic disease incidence and prevalence, improve quality of life, and reducing the healthcare burden and medical expenditures

Precision Nutrition: Advancing the Understanding of How Nutrition Impacts Human Health

OBJECTIVE
To understand individual and population subgroup differences in how diet relates to health

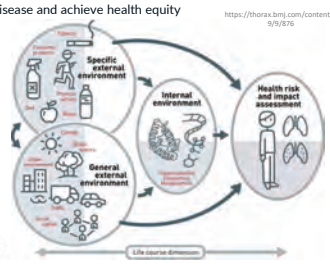
GOAL
To inform policies and guidelines tailored to reduce chronic disease and achieve health equity

https://thorax.bmj.com/content/69/9/876

RESEARCH NEEDS
Precise measures of dietary intake, chrononutrition, lifestyle, genetic/epigenetics, microbiome

Biomarkers, sensors, wearables, metabolomics and other technologies must be developed to characterize the dietary exposome

Machine learning, AI, and data science to integrate and optimize multi-level data from various sources to characterize the exposome



Bioindicators: Not just SAY you eat, but how exposures can be objectively measured

- Self reported diet is not adequate
- Responses to dietary exposures alter absorption, digestion, metabolism, and excretion of food components
- Various measures exist and novel tools can be developed to bridge limitations in self-report
- Develop new data repositories

Data Science: What we know, where we can go

- The dietary exposome is complex and multi-level data need to be integrated
- Variability and complexity in responses to similar exposures
- AI and ML is being exploited with existing data, and new tools and "inputs" are yet to be discovered
- Help tailor dietary and health recommendations

Integrating systems-based nutrition and behavior data to create a highly diversified food system

3. Beadle, Allison

The American Lamb Board

- Founded in 2002
- Funded by checkoff assessment
- Focus on research, education and promotion

The U.S. Sheep Industry

- Sheep raised in all 50 states
- About 80,000 sheep ranches
- Leading lamb production states:
  - Texas
  - California
  - Wyoming
  - Utah
  - Colorado
  - South Dakota

American Lamb Breeds

- 80 percent of American Lamb are raised for meat (wool is byproduct)
- American lamb is larger than imported lamb
- More than 40 breeds of sheep in the United States
- Most popular U.S. Sheep breeds: Suffolk, Dorset and Hampshire

Benefits of Sheep Grazing

- Cost effective solution for natural land management
- Natural weed control around vineyards, orchards and solar operations
- Protecting high risk communities from wildfires

American Lamb Sales

- Approximately 360 million pounds of lamb are sold each year in the U.S.
- Traditionally about 60% retail / 40% foodservice
- U.S. Per Capita Consumption: ~1.1 lb/person

The Traditional Lamb Consumer

- Income plays a role in lamb consumption
- Males are more likely to be lamb eaters
- Lamb consumption linked to special occasions/holidays
- Many consumers only eat lamb at restaurants

The Changing Lamb Consumer

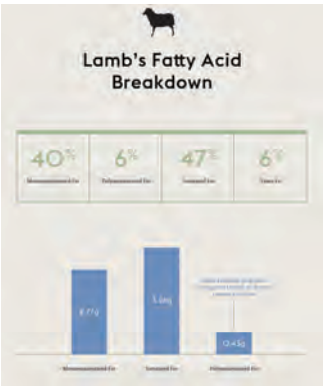
- New generation of adventurous eaters with no biases towards lamb
- Consumers prefer American Lamb and will pay a premium
- Strong and growing interest in authentic global flavors

Nutrition Profile

Excellent Source
Protein
Zinc
Selenium
Niacin
Vitamin B12

Good Source
Iron
Riboflavin
Vitamin B6
Pantothenic Acid
Copper
Phosphorous

Lamb's Fatty Acid Breakdown



Culinary Medicine Workshops

Research To-Date

- **Nutrient Composition**
  - U.S. Grain-Finished & Grass-Finished Lamb - Complete Nutrient Analysis of Ten Lamb Cuts and Ground Lamb (Colorado State University)
- **Environmental Footprint**
  - Evaluating the Environmental Footprint of Four Types of U.S. Sheep Operations (Michigan State University)

Research Opportunities

Flavor & Cultural Dietary Pattern Relevance

- **Flavor & Healthy Dietary Patterns** – Does consuming lamb as part of a dish containing vegetables (or X) improve meal satisfaction/enjoyment and support increased vegetable (or X) consumption?
- **Flavor & Satiety** – Does the flavor of lamb influence satiety and encourage decreased calorie consumption during a meal?
- **Nutrition Education & Cultural Dietary Patterns** – Does including lamb as part of culturally relevant nutrition education support healthy eating behavior change in specific cultural/ethnic populations?

Production Practices & Environmental/Nutrient Profile Impact

- How can sheep grazing practices and cover crops improve soil composition, land productivity, and lamb nutrition composition?

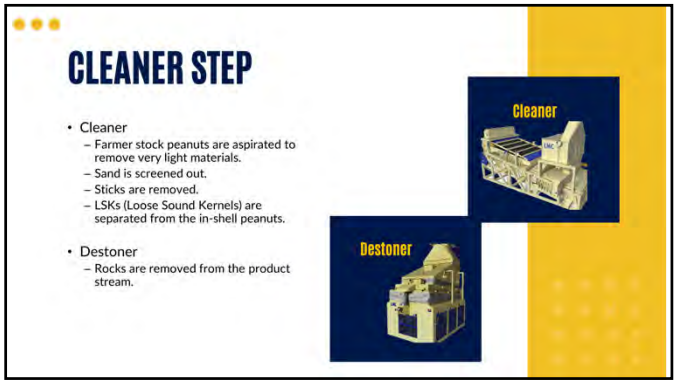
4. Cowart, Darlene and Sterling, Samara

1

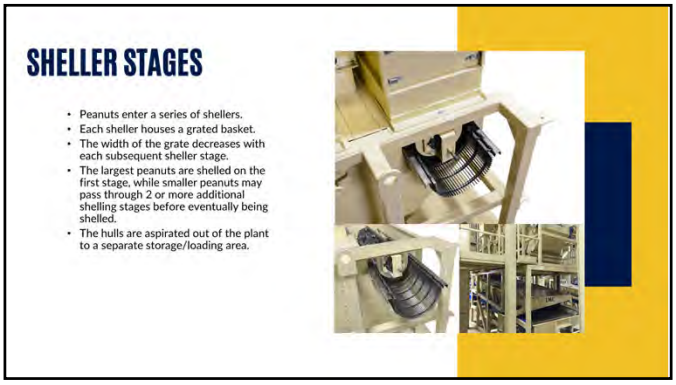
2

3

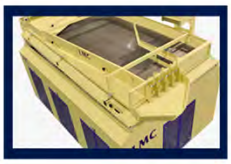
4



5



6



GRAVITY SEPARATORS

- Peanuts float along a bed of air (fluidized bed).
- Shelled peanuts are separated from unshelled peanuts due to differences in density.
- Unshelled peanuts return to the sheller bank.
- Shelled peanuts move forward to the sorters.

7

SORTING STEP

Optical Sorters

- High-resolution cameras detect and remove defects based on color.
- Rejections can also be made based on differences in size and shape.

Laser Sorters

Utilize 2 types of scanners consisting of multiple lasers and hyperspectral imaging capable of detecting foreign materials.

8

SIZING STEP

- Shelled peanuts are sorted into various "cuts"
  - Jumbos
  - Mediums
  - #1's
  - Splits
- Sizing Shakers (top photo) have screens with various sized openings to allow larger peanuts to ride the screen and smaller peanuts to fall through the screen.
- Precision Sizers (bottom photo) contain spinning reels capable of fine-tuning to a specific size of peanut.
- These two sizing systems are used in tandem to take a "rough" size down to a precise size.

9

METAL DETECTOR

10

PACKAGING

- Sized peanuts are temporarily held in large Pack Out Bins.
- From the bins, the peanuts are packaged into super sack totes or into storage bins to later be loaded into bulk conveyances such as trucks or rail cars.
- During the packaging step, peanut lots receive identifying lot numbers and are sampled and graded by FSIS (Federal State Inspection Service) who issues the official grade certificates. Part of the composite sample collected by FSIS is used for the aflatoxin analysis by the 3rd party USDA approved lab.

11

SHIPPING OPTIONS

DRY VAN

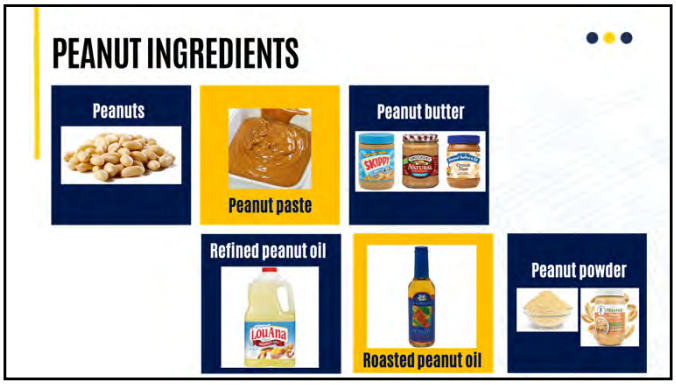
EXPORT

RAILCARS

BULK TANKERS

12

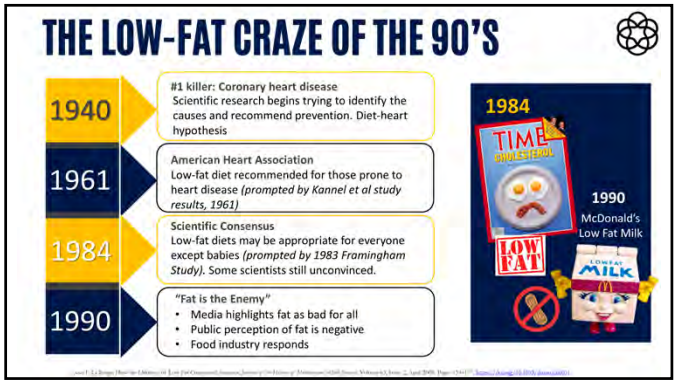
13



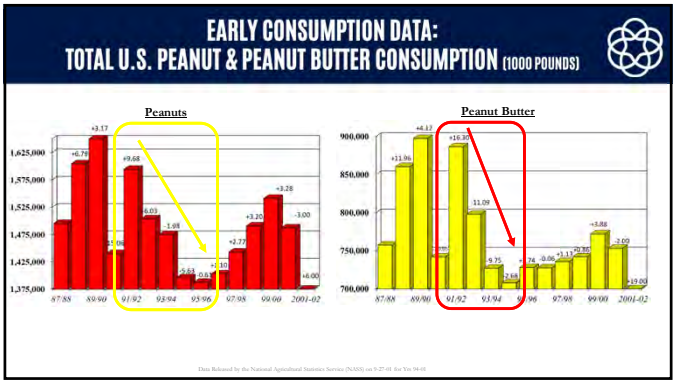
14

15

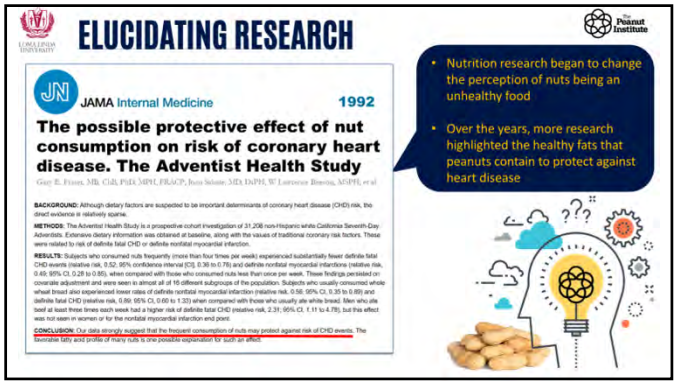
16



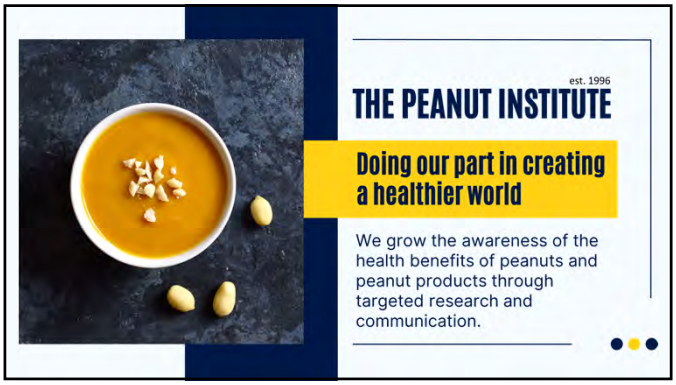
17



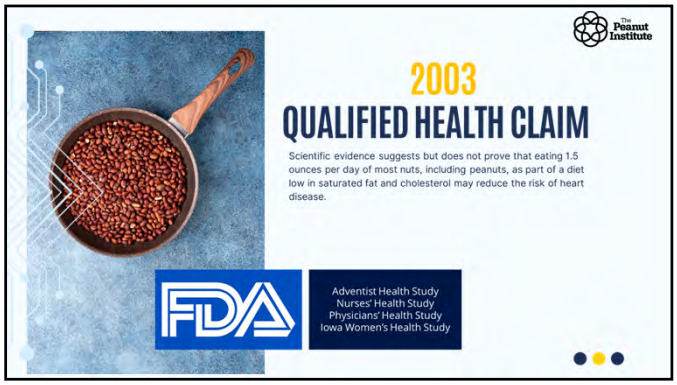
18



19

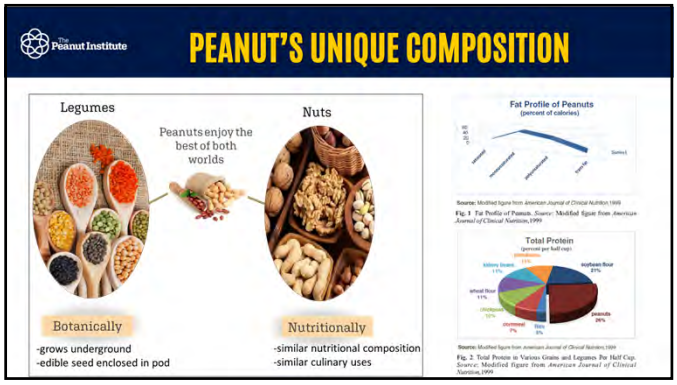


20

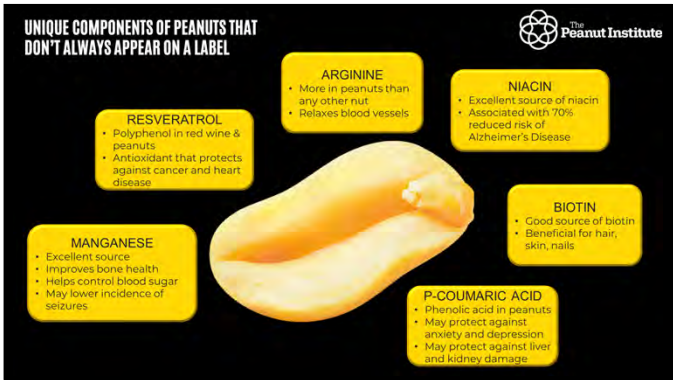


21

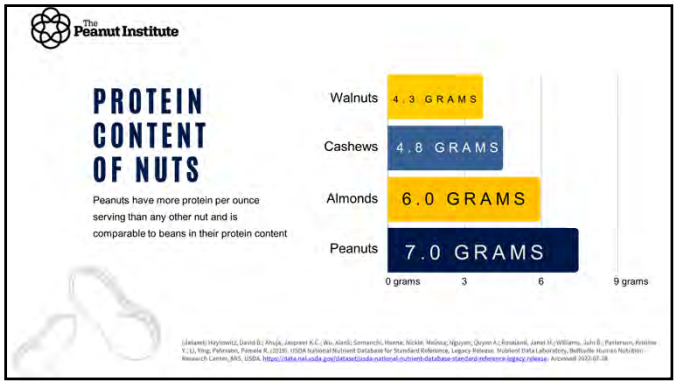
22



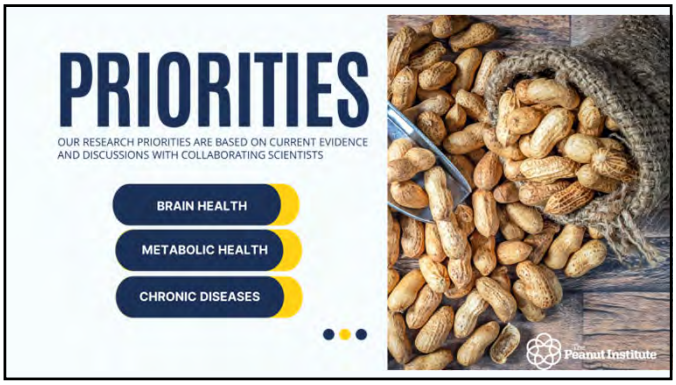
23



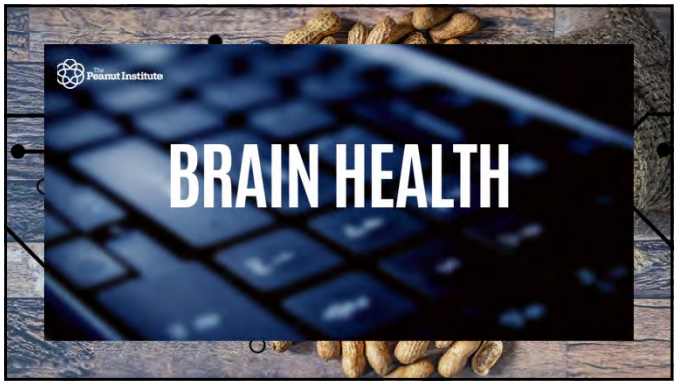
24



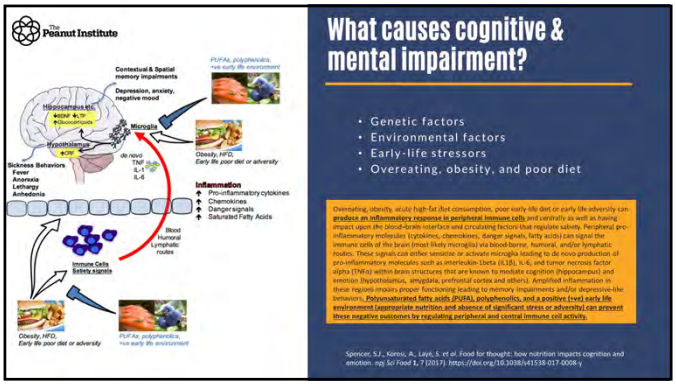
25



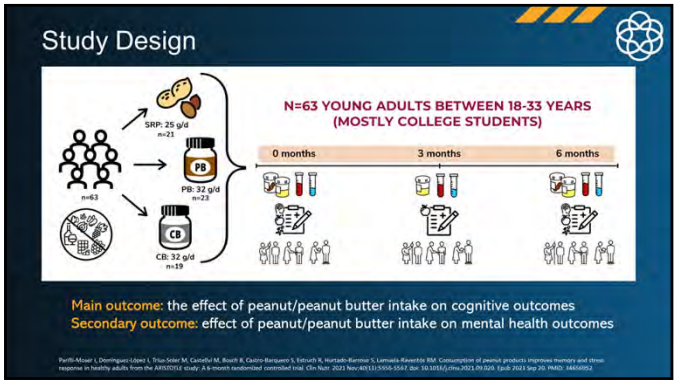
26



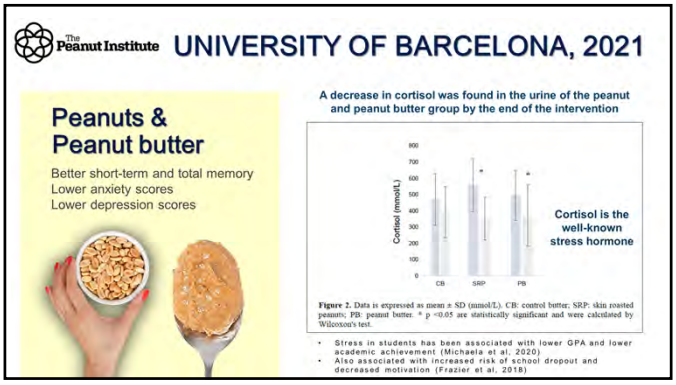
27



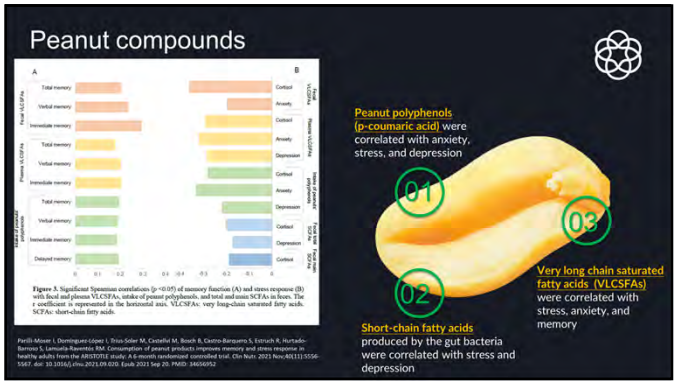
28



29



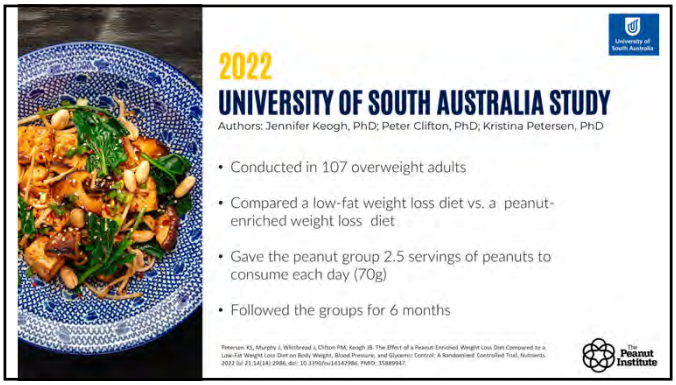
30



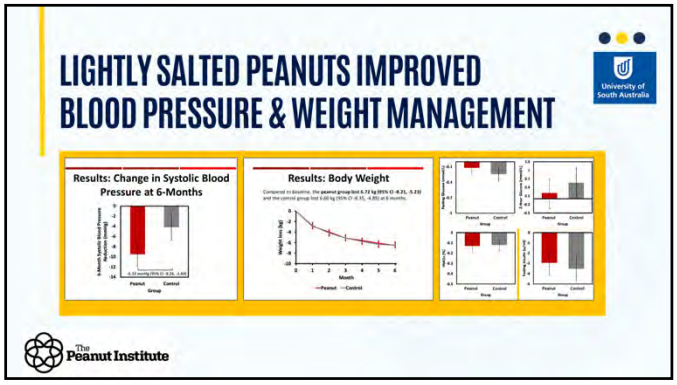
31

32

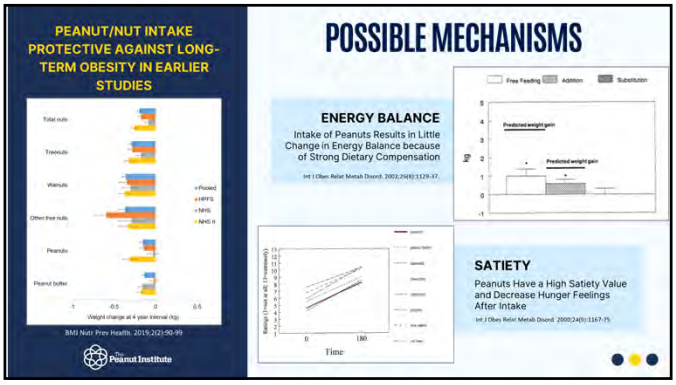
33



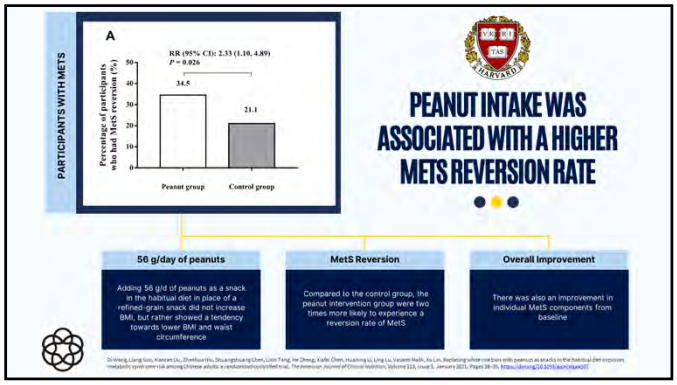
34



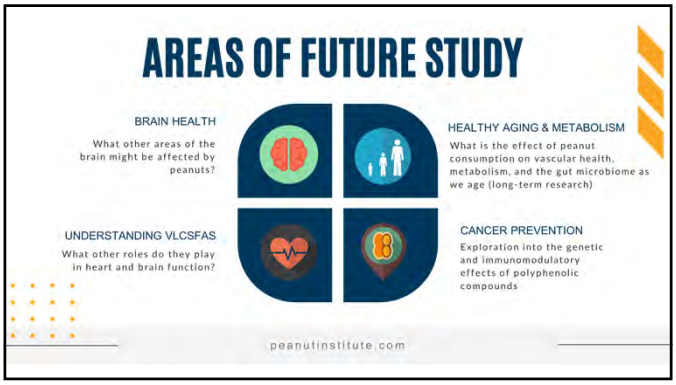
35



36


PARTICIPANTS WITH METS
A
RR (95% CI): 2.33 (1.10, 4.89)
P = 0.026
Percentage of participants who had MetS reversion (%)
34.5
21.1
Peanut group
Control group
PEANUT INTAKE WAS ASSOCIATED WITH A HIGHER METS REVERSION RATE
56 g/day of peanuts
Adding 56 g/d of peanuts as a snack in the habitual diet in place of a refined-grain snack did not increase BMI, but rather showed a tendency towards lower BMI and waist circumference
MetS Reversion
Compared to the control group, the peanut intervention group were two times more likely to experience a reversion rate of MetS
Overall Improvement
There was also an improvement in individual MetS components from baseline

37


AREAS OF FUTURE STUDY
BRAIN HEALTH
What other areas of the brain might be affected by peanuts?
HEALTHY AGING & METABOLISM
What is the effect of peanut consumption on vascular health, metabolism, and the gut microbiome as we age (long-term research)
UNDERSTANDING VLCSFAS
What other roles do they play in heart and brain function?
CANCER PREVENTION
Exploration into the genetic and immunomodulatory effects of polyphenolic compounds
peanutinstitute.com

38


The Peanut Institute
GET IN TOUCH WITH US
FOR INQUIRIES OR FOLLOW-UPS
SAMARA STERLING, PHD
SSTERLING@PEANUT-INSTITUTE.COM
229-888-0216 EXT 312
DARLENE COWART, PHD
DCOWART@BIRDSONGPEANUTS.COM
WEBSITE: PEANUTINSTITUTE.COM

39

5. Dabruzzi, Lanier

Sorghum:
The Resource Conserving Ingredient™

Lanier Dabruzzi, MS, RD, LD
United Sorghum Checkoff Program

SORGHUM THE SMART CHOICE

Sorghum's Sustainability Story

- Nationally, 91% of sorghum acres are rain-fed, which results in 1.5 trillion gallons of irrigation water savings per year.
- Sorghum farmers' use of conservation tillage methods in biofuel demand areas can reduce air quality-harming erosion by more that 75%.
- Sorghum stalks left standing in the field add nutrients back into the soil, break up soil compaction, help retain moisture and reduce effects of wind erosion, improving soil health.
- Sorghum improves air quality by removing carbon from the atmosphere and safely storing it in the soil.
- Sorghum-based ethanol is a clean-burning fuel that reduces particulate matter by 50%! and has a lower cost of production compared to ethanol using other crops.
- Sorghum offers valuable characteristics as it relates to wildlife conservation. Its stalks provide critical habitat and ideal winter cover for pheasants and quail.

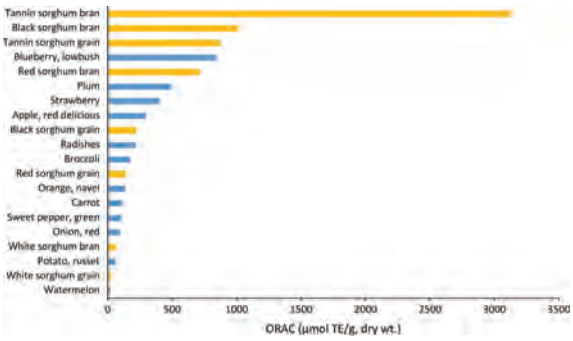
[1] https://www.sorghumcheckoff.com/wp-content/uploads/2021/10/The-Carbon-Footprint-of-Sorghum.pdf
[2] https://www.extension.purdue.edu/extmedia/cs/ct-1.html, https://www.sorghumcheckoff.com/wp-content/uploads/2021/1/Sorghum-Checkoff-Carbon-Footprint-Final-April-2020.pdf
[3] https://www.extension.purdue.edu/extmedia/cs/ct-1.html
[4] https://www.researchgate.net/publication/232018073_Crop_Rotation_and_Tillage_Effects_on_Organic_Carbon_Sequestration_in_The_Semiarid_Southern_Great_Plains
[5] https://fbcourtel.com/2018/04/11/new-studies-show-ethanol-reduces-emissions-and-improves-air-quality/
[6] https://www.usda.gov/sites/default/files/documents/wildlife-habitat-0819.pdf
[7] https://www.michigandnr.com/publications/pdfs/huntingwildlifehabitat/Landowners_Guide/Species_Mgmt/Quail.htm

SORGHUM

	SORGHUM	CORN	WHEAT	OAT	RICE	QUINOA
PROTEIN	28.68%	5.55%	15.98%	11.88%	5.65%	12.32%
FIBER	33.5%	6.07%	21.50%	14.20%	5.00%	14.00%
PHOSPHORUS	32.36%	6.05%	16.46%	14.41%	0.89%	17.02%
ZINC	21.25%	3.55%	23.41%	21.27%	5.21%	13.87%
THIAMIN	38.73%	10.97%	11.08%	14.82%	2.33%	12.48%
RIBOFLAVIN	10.33%	3.59%	3.23%	2.88%	1.40%	11.84%
NIACIN	32.28%	9.40%	20.12%	3.29%	2.53%	3.60%
VITAMIN B6	36.48%	4.65%	5.76%	0.68%	2.14%	10.12%
SELENIUM	31.05%	0.92%	61.20%	22.97%	14.25%	7.12%
COPPER	44.17%	5.1%	32.20%	19.24%	7.62%	29.86%
IRON	26.12%	2.45%	13.68%	11.70%	1.08%	11.58%
MAGNESIUM	55.00%	7.48%	16.00%	15.04%	1.86%	21.33%
MANGANESE	97.39%	6.02%	62.69%	59.00%	15.94%	38.40%

EXCELLENT SOURCE (20%+ Daily Value) GOOD SOURCE (10-19% Daily Value)

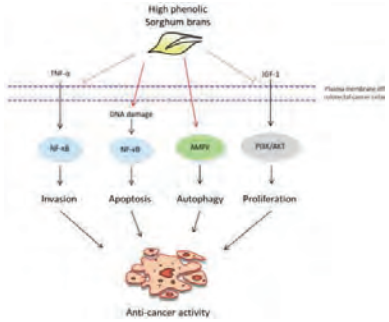
Sorghum & Antioxidants



Dykes, L. (2019). Sorghum Phytochemicals and Their Potential Impact on Human Health. In: Zhao, ZY., Dahlberg, J. (eds) Sorghum. Methods in Molecular Biology, vol 1931. Humana Press, New York, NY. https://doi.org/10.1007/978-1-4939-9039-9_9

SORGHUM

Sorghum & Cancer



Lee SH, Lee HG, Lee J, Amarakoon D, Lou Z, Noronha LE, Herald TJ, Perumal R, Smolensky D. Polyphenol Containing Sorghum Brans Exhibit an Anti-Cancer Effect in Apc Min/+ Mice Treated with Dextran Sodium Sulfate. Int J Mol Sci. 2020 Aug 1;21(15):8286. doi: 10.3390/ijms21158286. PMID: 34360052; PMCID: PMC8347436.

SORGHUM

Sorghum & Diabetes

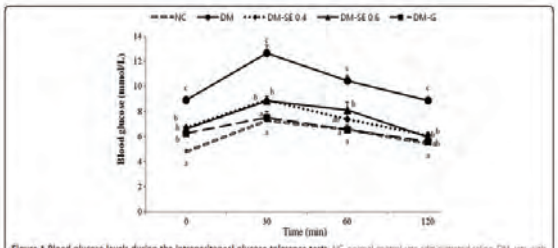


Figure 1 Blood glucose levels during the intraperitoneal glucose tolerance tests. NC, normal control rats administrated saline; DM, rats with diabetes mellitus administrated saline; DM-SE 0.4, rats with diabetes mellitus administrated 0.4 g/kg body weight of sorghum extract; DM-SE 0.6, rats with diabetes mellitus administrated 0.6 g/kg body weight of sorghum extract; DM-G, rats with diabetes mellitus administrated 0.7 mg/kg body weight of glibenclamide. The values are mean ± SEM (n = 5). Values with different superscripts are significantly different at p < 0.05 using ANOVA with Duncan's multiple range test.

Kim, J., Park, Y. Anti-diabetic effect of sorghum extract on hepatic gluconeogenesis of streptozotocin-induced diabetic rats. Nutr Metab (Lond) 9, 106 (2012). https://doi.org/10.1186/1743-7075-9-106

SORGHUM

Sorghum & Heart Disease

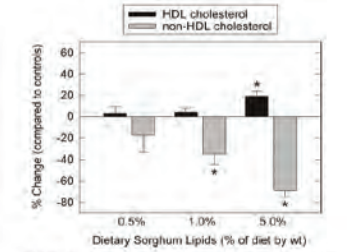


FIGURE 2 The percentage of change in plasma HDL and non-HDL cholesterol concentrations in hamsters fed 0.5, 1.0 or 5.0% grain sorghum lipids compared with controls. Values are means ± SEM; $n = 7–8$. *Different from control, $P < 0.05$.

Carr TP, Weller CL, Schlegel VL, Cuppett SL, Gualenan DM Jr, Johnson KR. Grain sorghum lipid extract reduces cholesterol absorption and plasma non-HDL cholesterol concentration in hamsters. J Nutr. 2005 Sep;135(9):2236–40. doi: 10.1093/jn/135.9.2236. PMID: 16140904.

Uses, Forms & Functionality

- Forms
  - Whole grain, Pearled, Flour, Popped, Flaked, Malted, Bran, Syrup
- Colors
  - White, Onyx, Burgundy
- Functionality in Food Production
  - Maintains structure
  - Moisture retention
  - Extrusion
  - Shelf Stability

Consumer Demand

- Antioxidant-Rich
- Plant-Based Protein
- Fiber-Rich
- Ancient Grain
- non-GMO
- Gluten-Free
- Responsibly Sourced/Sustainable
- Free from Top 9 Allergens

Nearly 80% Retention Rate

Questions?

Lanier Dabruzzi, MS, RD, LD
Director of Food Innovation & Institutional Markets
lanier@sorghumcheckoff.com

6. Feeney, Mary Jo

Mushroom Nutrition Research Advancing Health Through Agriculture

- **Background & history**
- **Evolving priorities/gaps/challenges**
- **Synergy with research institutions & organizations**
- **Current priorities going forward**

1

Mushroom Promotion, Research & Consumer Information Act of 1990

- Effective January 28, 1993
- Authorizes the development of a nationally coordinated program of promotion, research, consumer information and industry information designed to:
  - strengthen the mushroom industry's position in the fresh market
  - maintain and expand existing markets and uses for fresh mushrooms
  - add new markets and uses for fresh mushrooms
- Identifies and funds research to discover mushroom's role in a nutritious diet that improves health or lowers the risk of chronic disease

2

Nutrition Research Program 2001 to 2023 and Beyond

- 2002 Research Advisory Panel established
- 2013 Summit reported research to date
- 2019 Mini-summit set priorities for 5 years

Over 40 studies from universities and in cooperation with federal agencies

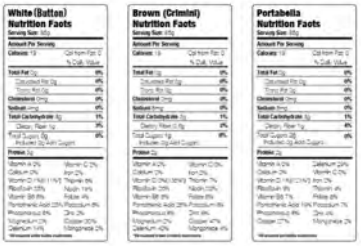
3

Nutrition Research Gaps to Fill

- Unsettled science and inconsistent findings
- Timeline to completion
- Move from what's not (calories, fat, cholesterol, sodium) to beneficial (micronutrients and bioactives)
- Establish mushrooms as a staple
- Impact of full serving on dietary guidance
- Personal and population benefits of Vit. D & "The Blend™"
- Culinary mushrooms – "medicinal attributes"
- Neither plant nor animal but a "Third Food Kingdom"

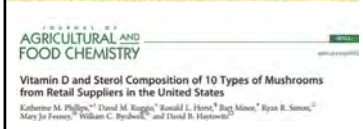
4

Discover More than the Absence



5

Composition Research



6

Consumption Benefits

cognition
theblend hearthealth
immunity satiety
guthealth dietquality
weightmanagement
dietaryguidelines

7

Communication Creates Synergy in the Research World

Most read article of the month

8

Communication: Synergy through Publication

9

Synergy: From Pilot Study to Federal Grant

10

Current Challenge and Research Response Mushrooms in Nutrition Guidance

Challenge	Response
Unique nutrient profile – across food groups	Under consumed nutrients: fiber (<4%), potassium (<8%) Vit. D (UV exposed 50%)
Used as a vegetable but not a vegetable	A third food kingdom?
Consumption vs recommended intake	Food pattern modeling
Limited evidence	Health outcomes – clinical trial

11

Fungi The Third Food Kingdom

PLANTS/BOTANY	ANIMALS/ZOOLOGY	FUNGI/MYCOLOGY
Contain chlorophyll and make their food via photosynthesis	Ingest their food	Lack chlorophyll; Exist in nature on decaying material or substrate commercially produced
Polysaccharides: Cellulose	Chitin in crustaceans/insects	Chitin
Phytosterols	Cholesterol	Ergosterol

Carlile MJ, Watkinson SJ. The fungi as a major group of organisms. In: *The Fungi*. London, UK: Academic Press; 1980:3Y6
Feeney MJ et al. Mushrooms: Biologically distinct and nutritionally unique. *Nutrition Today*. 2014 Nov: 49(6): 301-307

12

Nutritionally Unique

Food Group	Nutrients in Common
Fruits	Potassium Fiber
Vegetables	Fiber
Grains	Niacin, Riboflavin Pantothenic Acid
Protein	Selenium, Copper
Dairy	Vit. D (UV Exposed)

13

UV Exposure on Processing Line

- R.R. Simon et al. / *Food and Chemical Toxicology* 56 (2013) 278–289

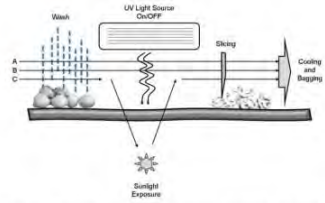
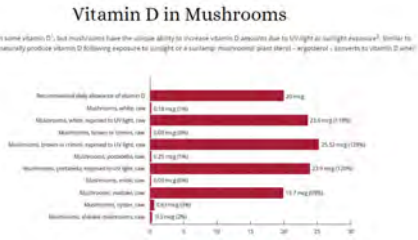


Fig. 3. Schematic overview of typical UV mushroom processing procedure used for production of vitamin D mushrooms.

14

Compared to Daily Value



15

Sunlight Exposure Science Consumer-based Approach

Nutrition & Food Sciences

Research Article — Open Access

A Nutritionally Meaningful Increase in Vitamin D in Retail Mushrooms is Attainable by Exposure to Sunlight Prior to Consumption

Katherine M Phillips* and Amy S Raser
Research Scientist, Biochemistry Department, Virginia Tech, USA

16 experiments – uniform protocol
150-600 IU (3.75-15 mcg)
15 minutes
Clear/partly cloudy
9:30 AM – 3:30 PM

16

Impact of ½ cup on USDA Food Patterns

Modeling the Nutritional Impact of Adding Mushrooms to USDA Food Patterns.
Agarwal S, Fulgoni V. *Current Developments in Nutrition*, Vol 4, Supplement 2, June 2020.
USDA Food Data Central database (https://fdc.nal.usda.gov/ https://health.gov/dietaryguidelines/2015-scientific-report/15-appendix-E3/

Nutrient	% Increase
✓**Fiber**	2-6%
✓**Potassium**	9-11%
Riboflavin (B2)	14-15%
Niacin (B3)	13-26%
Copper	13-22%
✓**Vit. D** UV exposed to 50% of DV	70-90%
•*Calories*	1%
•*Sodium*	1% or less
•*Saturated Fat*	None

✓=under consumed
• =limit

17

The Blend™…

- Reduces calorie and fat intake, Packs in nutrition,
- Boosts flavor, Reduces sodium intake, Extends portions,
- Saves $$$, Brings vegetables to the plate

18

Collaboration Benefits Consumers

DEVELOPMENT | INTRODUCTION TO INFLUENCERS IN FOODSER | EXPAND TO CONSUMERS

2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022

19

2020-2023 Health Promotion of Mushrooms
Wayne Campbell & Team, Purdue University

- Nutrimetabolomics: How nutrients and bioactive compounds interact and impact risk of disease
- Expand knowledge about mushroom-specific compounds
  - Over 1300 compounds identified in the 7 varieties
  - White, oyster, portabella, crimini, shiitake, maitake, and lion's mane
- Assess the effects of consuming different types (white button or oyster) and amounts (84 g or 168 g) of fresh mushrooms served cooked on postprandial changes in plasma insulin, glucose and triglycerides


20

Health Promotion of Mushrooms
Healthy Eating Patterns
Wayne Campbell & Team, Purdue University

- Assess the effects of including white button and oyster mushrooms 84 g/d raw or cooked as part of a healthy Mediterranean-style eating pattern for 8 weeks on measures of:
  - Risk factors for cardiovascular disease and type 2 diabetes, and blood markers of immunity and inflammation
  - Perceived mental health, anxiety, depression through questionnaires
- All food provided
- Anticipate completion in 2023

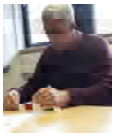


21

Cognitive, Neurological & Metabolic Effects
Claire Williams, University of Reading, UK
Barbara Shukitt-Hale, Tufts University

- Effect of oyster mushrooms as a source of ergothioneine on cognition & mood in older adults
- Effective dose equivalent to 0.5, 1 or 2 servings of fresh, cooked oyster and lion's mane mushrooms in short term study
- Effective dose of oyster in a 12-week study to measure cognitive function, mood, neural activity (electroencephalogram/EEG), neurogenesis and inflammation






22

Successful Nutrition Research
Key Takeaways

Nutrition Research Program Core Components



- ➢Composition – analysis of nutrients and bioactives
- ➢Consumption – preclinical and clinical studies to demonstrate health outcomes
- ➢Communication – of scientific results to increase collaborative opportunities among academic institutions, government and researchers, attract funding and enhance the body of scientific evidence

23

Healthy on the Plate
Gentle on the Planet

- Robinson, B., Winans, K., Kendall, A. *et al.* A life cycle assessment of *Agaricus bisporus* mushroom production in the USA. *Int J Life Cycle Assess* **24,** 456–467 (2019).. The Mushroom Sustainability Story: Water, Energy and Climate Environmental Metrics, 2017 SureHarvest.

24

Thank You

Mushroom Council
https://www.mushroomcouncil.org/

7. Hodges, Stephanie

INTERNATIONAL FRESH PRODUCE ASSOCIATION™

Nutrition Research & Priorities in the Fruit & Vegetable Industry

August 1, 2022

Presented by: Stephanie S. Hodges, MS, MPH, RDN
Consultant, IFPA

About IFPA

The International Fresh Produce Association is the largest and most diverse international association serving the entire fresh produce and floral supply chain, and the only to seamlessly integrate world-facing advocacy and industry-facing support.

MAKING THE CASE FOR MORE FRUITS & VEGETABLES

Consumption Trends

Background

Consumption	Chronic Disease	Healthcare
9 out of 10 Americans do not meet the 2020-2025 DGA fruit and vegetable consumption recommendations[1]	6 in 10 US adults have a chronic condition and 4 in 10 have more than one. Many of these are nutrition-related, including heart disease, some cancers, stroke, and diabetes[2]	A study published in 2019, found that unhealthy diets account for almost **20% or $50 Billion** of the U.S. healthcare costs annually from diabetes, heart disease, and stroke alone.[3]

Background

SNAP Population	Consumption Goal	Barriers
41.5 million people participated in SNAP in FY2021[4]	USDA research determined that SNAP recipients would have to allocate **40%** of SNAP benefits on fruits and vegetables to meet DGAs[5, 6]	**88%** of SNAP participants report facing challenges to a healthy diet[7]

↓ HEI Scores ↑ Obesity

AGRICULTURE & NUTRITION INNOVATIONS

Increasing Fruit & Vegetable Consumption

Gene Editing

- CRISPR Technology
  - Tomatoes (size of tomato, nutrient content, increase number produced)
  - Mushrooms (prevent browning)
  - Citrus fruits (potential to make them resistant to citrus greening disease)
  - Apples (non-browning)

Plant Breeding

- Plant breeding technologies can enhance color, size, shape and health and nutritional benefits of fresh fruits and vegetables.
- Plant breeding can inform conventional breeding programs.
- Plant breeding can help in responding to climate change.

Reducing Food Waste

- Technology
  - Edible coatings
  - Solutions for freshness
  - Digital technologies and expertise
- Partnerships through Food Donations
  - Project Food Box, Sunterra

Apeel

AgroFresh
We Grow Confidence

CONNECTING TRENDS & RESEARCH TO ADVOCACY

Policy Priorities

Food & Nutrition Policy Priorities

Child Nutrition Programs & Reauthorization

Fresh Produce in Federal Purchasing Programs

Federal Nutrition Assistance Programs: WIC & SNAP

White House Conference on Hunger, Nutrition & Health

Produce Prescription Programs

Dietary Guidelines for Americans & Other Regulatory Actions

Research Informing Policy

WIC Cash Value Benefit[8]

- Pre/Post-Increase Participant Survey (over 10,000 responses)
- Total daily F/V intake increased by 1/3 cup from 2.01 cups before increase to 2.31 cups with increase

Produce Prescription Programs[9]

- Increased F/V consumption by ~1/4 compared to baseline (2.2 cups → 2.49 cups)
- Reduced food insecurity compared to baseline; very low food insecurity decreased by almost half

Policy in Action to Increase Consumption: White House Conference Priorities

- Recommendation 1: F/V Benefit in SNAP.
- Recommendation 2: Expand FFVP.
- Recommendation 3: Improve USDA Purchasing Programs.
- Recommendation 4: Produce Prescriptions as a covered health benefit.
- Recommendation 5: Food labeling clarity for F/V.
- Recommendation 6: Incentivize F/V for all Americans.
- Recommendation 7: Cabinet-level national Director of Food and Nutrition.
- Recommendation 8: Collect/analyze data from federal feeding programs.

References

1. Centers for Disease Control and Prevention. https://www.cdc.gov/nccdphp/dnpao/division-information/mediatools/adults-fruitsvegetables.html#:~:text=Despite%20these%20positive%20health%20benefits,Behavioral%20Risk%20Factor%20Surveillance%20System
2. Centers for Disease Control and Prevention. "Chronic Diseases in America." https://www.cdc.gov/chronicdisease/resources/infographic/chronic-diseases.htm
3. Jardim TV, Mozaffarian D, Abrahams-Gessel S, Sy S, Lee Y, Liu J, et al. (2019) Cardiometabolic disease costs associated with suboptimal diet in the United States: A cost analysis based on a microsimulation model. PLoS Med 16(12): e1002981. https://doi.org/10.1371/journal.pmed.1002981
4. USDA FNS. SNAP Data Tables | Food and Nutrition Service (usda.gov)
5. Young, S. K., & Stewart, H. (2022). U.S. Fruit and Vegetable Affordability on the Thrifty Food Plan Depends on Purchasing Power and Safety Net Supports. International journal of environmental research and public health, 19(5), 2772. https://doi.org/10.3390/ijerph19052772
6. Carlson A., Frazão E. Food Costs, Diet Quality and Energy Balance in the United States. Physiol. Behav. 2014;134:20–31. doi: 10.1016/j.physbeh.2014.03.001.
7. USDA FNS. Barriers that Constrain the Adequacy of Supplemental Nutrition Assistance Program (SNAP) Allotments | Food and Nutrition Service (usda.gov)
8. Multi-State WIC Participant Satisfaction Survey: Cash Value Benefit Increase During COVID – WIC Research, Policy and Practice Hub (thewichub.org)
9. GusNIP NTAE Impact Findings Year 2 (nutritionincentivehub.org)

8. Kanter, Mitch

GLOBAL DAIRY PLATFORM

Key Programs

Texas A&M
IHA Agriculture Nutrition Workshop
August 1, 2022

Mitch Kanter, PhD
CSO

Agenda

1. Dairy Sustainability & *Pathways to Dairy Net Zero*
2. Dairy Nourishes Communities
3. Project Proteos

A key source of vitamins and minerals would vanish

Protein
Potassium
Vitamin A
Vitamin D
Calcium

Dairy is a Key Provider of Nutrients Globally

- 7% of kcal intake
- 49% of calcium
- 18% of essential amino acids
- 12% of protein
- 28 of 29 essential nutrients

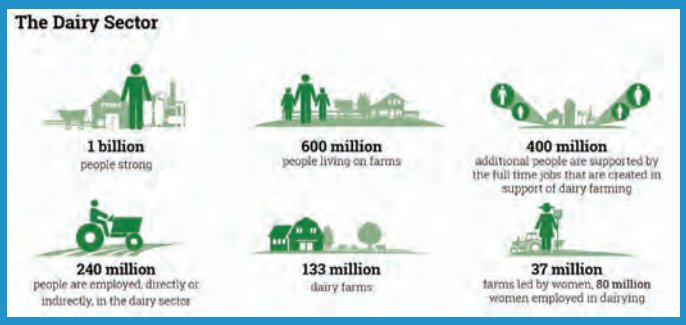
A Nutrition Void Would be Created – One that Cannot be Easily Met by Plants Alone

Dairy is Critical for Meeting Nutrition Needs as the Population Grows

10 Billion by 2050

When animal-source foods are absent, supplements will be needed

How would we make up this nutritional shortfall in a world without cows?



GLOBAL DAIRY PLATFORM

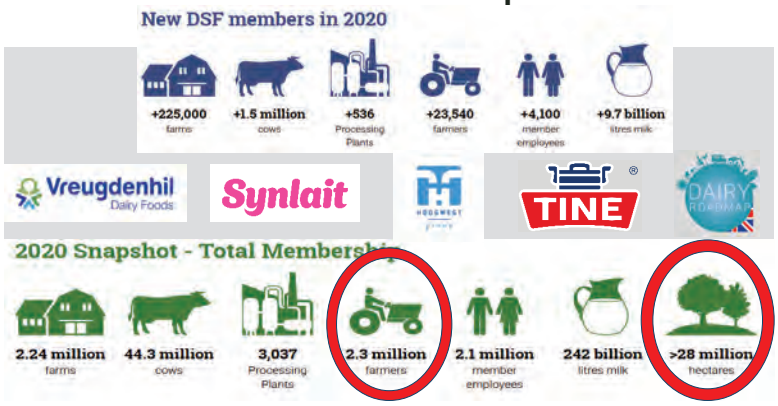
Tracking, Measuring & Reporting Sustainability Performance

GDP

dsf Dairy Sustainability Framework

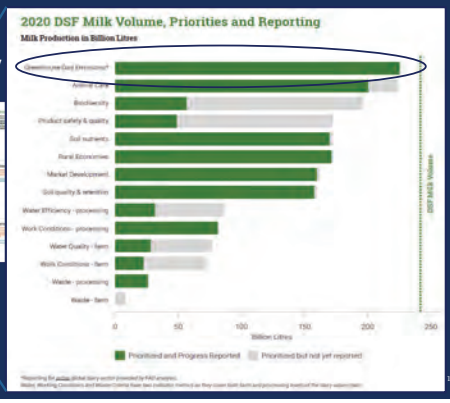
- Launched 2013 – Global Perspective
- Tracks Economic – Social – Environmental dimensions
- Pilots in Vietnam, India, Rwanda & Kenya
- 2022 – Developing DSF-*Lite*
- Currently 240 billion liters of milk - 30% of global milk production ~50% formal milk

2020 Membership



Progress and Reporting

https://dairysustainabilityframework.org/



dsf Dairy Sustainability Framework

Data + Analysis ➡ Insights ➡ Understanding ➡ Action

Pathways to Dairy Net Zero

July 2022

PATHWAYS TO DAIRY NET ZERO.

OBJECTIVES

PATHWAYS TO DAIRY NET ZERO.

- Launched during UN Food Systems Summit
- Systematically ***Introduce or enhance climate action*** in global dairy systems
  - food and nutrition security
  - livelihoods and economic growth
  - animal health and welfare
  - climate and natural resource use
- Develop ***pathways*** for all dairy systems
- Stimulate commitments + Action

ORGANIZATIONS SUPPORTING THE INITIATIVE

PATHWAYS TO DAIRY NET ZERO.

Ace Farming Company (Australia)	Dairy Asia (Mongolia)	European Carbon Farmers (Europe)
Agri Networking Tools (Italy)	Dairy Australia (Australia)	Fair Cape Dairies (South Africa)
Agrifirm (Netherlands)	Dairy Connect (Australia)	Femeleche (Mexico)
Agro Inversiones JS (Mexico)	Dairy Council for Northern Ireland (United Kingdom)	First Milk (United Kingdom)
Agropur Cooperative (Canada)	Dairy Farmers of America (United States)	Fogs Global Research & Consultancy Centre (India)
American Dairy Products Institute (ADPI) USA	Dairy Farmers of Canada (Canada)	Fonterra Co-operative Group (New Zealand)
Anscitech Inc. (Canada)	Dairy Industry Ireland (Ireland)	FOSS Analytics (Denmark)
Arla Foods (Denmark)	Dairy Management Inc. (United States)	Garrett and Gregory Traders (Canada)
Asecor (Mexico)	Dairy Processors Association of Canada (Canada)	GEA Farm Technologies (Germany)
Australian Dairy Products Federation (Australia)	Dairy UK (United Kingdom)	Glanbia (Ireland)
Bar E Dairy (United States)	Dairygold (Ireland)	Government of Uruguay (Uruguay)
Bavarian State Research Center for Agriculture (Germany)	Danone (France)	Granarolo S.p.A. (Italy)
Berg Schmidt America (United States)	DeLaval (Sweden)	Granja Tepeyac (Mexico)
Beta Santa Monica SPR de RL de CV (Mexico)	Direct Farm Supply (United States)	Great Vot (India)
Brazzale, SPA (Italy)	Dutch Dairy Association (Netherlands)	Greenlabs (South Korea)
Brunn Dairy Farm LLC. (United States)	Elanco (United States)	Hilmar Cheese Company, Inc. (United States)
China Mengniu Dairy (China)	Environmental Defense Fund (EDF) (United States)	IICA (Costa Rica)
CNIEL (France)	Escopa Corporation Ltd (Kenya)	Innovation Center for U.S. Dairy (United States)

ORGANIZATIONS SUPPORTING THE INITIATIVE

PATHWAYS TO DAIRY NET ZERO.

International Dairy Foods Association (United States)	Milco (PVT) Ltd. (Sri Lanka)	Savencia Fromage & Dairy (France)
International Finance Corporation (United States)	Mind + Matter (United Kingdom)	SEBI (United Kingdom)
Japan Dairy Industry Association (Japan)	Mooh Cooperative (Switzerland)	Serano Africa (Africa)
Jersey Overseas Aid (Jersey)	Morinaga Milk Industry (Japan)	Shamba Box (Africa)
JJ Project Consultants (India)	National Dairy Development Board (India)	Sindilat (Brazil)
J-Milk (Japan)	National Poverty Graduation Programme (Pakistan)	Synlait (New Zealand)
JNU (Netherlands)	NDSA (Nepal)	The National Milk Producers Federation (United States)
Kite Consulting (United Kingdom)	Nestle Ltd. (Switzerland)	U.S. Agency for International Development (USAID) (United States)
La Vida Láctea (Mexico)	OptaHaul (Ireland)	U.S. Dairy Export Council (United States)
Lactalis (France)	Palmhouse Dairies (Kenya)	U.S.Department of Agriculture (USDA) (United States)
Land O'Lakes (United States)	Pioneer Natural Capital (Australia)	Uludag University (Turkey)
Lekhanath Dairy International (Nepal)	Precision Strategic Solutions (Canada)	University of Minnesota (United States)
Leprino Foods (United States)	Rabobank (Netherlands)	University of Montevideo (Uruguay)
LIC (Livestock Improvement Corporation Limited) (New Zealand)	Red Oak Farms (Canada)	Wageningen University (Netherlands)
Malery Dairies (Australia)	Royal DSM (Netherlands)	Woodlands Dairy (Pty) Ltd. (South Africa)
Massey University (New Zealand)	Royal FrieslandCampina (Netherlands)	Yili Group (China)
Megmilk Snow Brand Co., Ltd (Japan)	SA Dairy Farmers Association (South Australia)	Wageningen University (Netherlands)
Meiji Holdings (Japan)	Saputo (Canada)	Your Name Goes Here!

2022: ACTIONS

PATHWAYS TO DAIRY NET ZERO.

RESEARCH, ANALYSIS, TOOLS & METHODS: Describe the plausible solution pathways and their climate impact

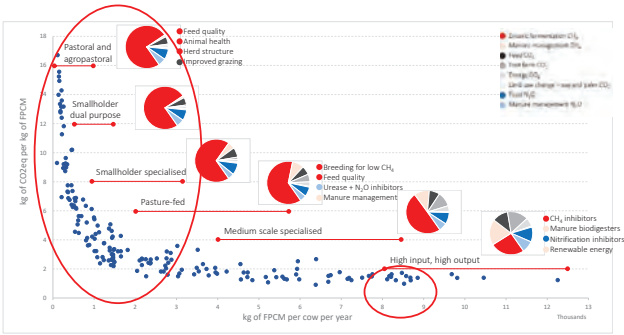
- ✔ Finalize new typology of dairy production systems
- ✔ Select relevant mitigation interventions for each system
- ✔ Estimate baseline emissions (2015) from the global sector and emissions projected to 2050 under a BAU scenario, and a first approach to define mitigation pathways for the sector.
- ✔ Estimate climate impacts of these mitigation pathways
- ✔ Develop Pathways Guides that matched to farming system typologies with practical, executable steps

EXECUTION, DELIVERING THE RESULTS: Build momentum, demonstrate progress across both developed and emerging dairy economies

- ✔ Engage current supporters and conduct outreach to new ones
- ✔ Enumerate the progress being made in developed dairy economies
- ✔ Identify and engage with key emerging dairy economies as early adopters
- ✔ Prepare Concept Note for submission to Green Climate Fund and others to support execution
- ✔ Create momentum for change by sharing results and progress during COP27 and other key events

Latest research

PATHWAYS TO DAIRY NET ZERO.



Source: FAO GLEAM 3, unpublished 2020 data

Dairy Nourishes Communities

Prepared by VENTURE27 | BAIN

Our Impact In Tanzania

DNA has delivered **impact across the dairy value chain** during the initial pilot phase in Tanzania

/ PILOT PHASE RESULTS

Grow Consumer Demand

18%
revenue contributed from new direct-to-consumer channel with processor over first 5 months, replacing sales from HORECA customers lost during COVID-19

3x
increase in customer order size for processor after scaling branded point-of-sale cold storage at mini-markets

275K
consumers reached through DNA supported radio campaigns during National Milk Week

Piloting sustainable parent-funded school milk promotion program with processors eager to scale beyond current 555 weekly servings based on strong demand

Drive Enterprises to full potential

35%
YOY revenue growth for processor after stabilizing and accelerating business with COVID response and recovery plan

2x
annual revenue expected for smaller processor on path to double revenue after 1 year of DNA interventions

Enabled enhanced product recipes and improved quality through better raw milk handling based on GDP volunteer expertise

Increase Farmer Production

98-100%
milk acceptance rate achieved at MCCs, up from ~93%, by helping farmers improve raw milk handling

5.5L
increase in average productivity per cow per day following 9 months of enhanced extension support for farmers linked to processors

57%
increase in farmer incomes after 9 months leading to average annualized income improvements of $524 per farmer as a result of improved productivity

32%
Reduction in on-farm GHG emission intensity after 9 months sustainable intensification of milk production (one of 5 criteria tracked by DNA on the Dairy Sustainability Framework)

OPERATING ENVIRONMENT

65 processors equipped with COVID response and recovery playbook via workshops delivered by DNA, Tanzania Dairy Board, and Tanzania Milk Processors Association

12 key government and industry bodies engaged quarterly in stakeholder meetings convened by DNA to share lessons learned for scaling impact

Note: Farmer production results based on 80% of DNA farmers that have received 9 months of extension support at 30 Sept 2021. 20% of the farmer base has only received 6 months of extension support, and is reporting improvements in line with the trajectory of the broader base.

GLOBAL DAIRY PLATFORM

Protein Quality: Project Proteos Status Update

RESPONSIBLE + SUSTAINABLE

Mitch Kanter, PhD

Protein digestibility corrected amino acid score (PDCAAS)

Adopted by FAO/WHO in 1990 as preferred method to evaluate protein quality

- Correction for nitrogen digestibility (average digestibility)
- Foods/ingredients given score between 0 (lowest) and 1 (highest)
- Proteins with score >1 truncated to 1.0
- Digestibility determined in a rat model
- Fecal vs ileal digestibility
- Effect of processing not accounted for (lysine availability)

1.0 Highest

0.0 Lowest

FAO/WHO, 1990

Problems identified for routine use of DIAAS

FAO, 2013, 2014, 2018

> Lack of published data on true ileal AA digestibility of human foods

> Lack of data on foods representative of human diets in developing countries

> Are digestibility values determined in the pig (as an animal model) representative of those of humans?

Project Proteos

- Funded by an international consortium of food companies and food sectors
- Coordinated by Global Dairy Platform, Chicago, USA.

Determination of true ileal amino acid digestibility and DIAAS in protein sources commonly consumed by humans

> Overall project supervision - Riddet Institute, Massey University, NZ.

Studies carried out at:

> AgroParisTech INRA, France

> Riddet Institute, Massey University, NZ

> University of Illinois, USA

> Wageningen UR, the Netherlands

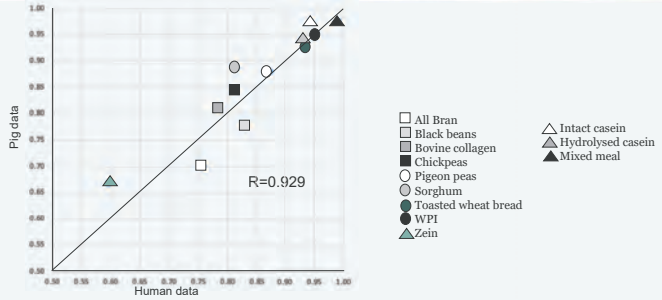
Project PROTEOS – Overall aims

- **Phases I and II**
  - Evaluate the repeatability of TIAAD data determined in the same (intra-laboratory) and different (inter-laboratory) laboratories
  - Derive a regression equation between true ileal AA digestibility data determined in the growing pig and adult human
- **Phase III**
  - Generate data on true ileal AA digestibility for a database including 100 human foods

Human study: True ileal AA digestibility Naso-ileal intubation vs ileostomates

- **Direct determination of true ileal AA digestibility in humans**
  - Naso-ileal intubation
  - Human ileostomates
  - WPI and zein

Mean true ileal digestibility of amino acids for protein sources, determined in the human and pig



Conclusions

- Reproducibility (inter-laboratory) and repeatability (intra-laboratory) of standardized protocol with the pig confirmed
- Pig shown to be a suitable model for the human to determine true ileal amino acid digestibility.

Standarised protocol to determine TIAAD in the pig supported

Manuscript published in Journal of Nutrition

Phase III:

Determine true ileal AA digestibility for 90 more ingredients/foods.

Thank you.

GLOBAL DAIRY PLATFORM

9. Kanter, Mitch

apre Alliance for Potato Research & Education

Alliance for Potato Research and Education (APRE) Overview

1

APRE is Grounded in Science with Support Across the Potato Industry

MISSION

Dedicated to advancing the scientific understanding of the role white potatoes *(baked, boiled, fresh, fried, frozen)* play in promoting the health of all people

MEMBERS

McCain, Simplot, Cavendish, National Potato Council, Moss Farms, Potatoes USA, R.D. Offutt Farms, Canadian Horticultural Council / Conseil canadien de l'horticulture, AFFI American Frozen Food Institute

apre 2

2

Addressing misperceptions

XXXV. THE VALUE OF WHOLE POTATO IN HUMAN NUTRITION[1].

By STANISŁAW KAZIMIERZ KON and ANIELA KLEIN.

From the State School of Hygiene, Warsaw, Poland.

(Received December 29th, 1927.)

"An experiment is described in which two adults, a man and a woman, lived over a period of 167 days in nitrogen equilibrium and in good health on a diet in which the nitrogen was practically solely derived from the potato."

apre

3

APRE is Responding to Today's Potato Nutrition Landscape

Potatoes continue to be inaccurately (and negatively) singled out among many food and nutrition thought leaders, policy makers, researchers and influencers

apre 4

4

SWOT

STRENGTHS

- Well positioned in current policy (e.g. WIC, DGA)
- Nutrient dense (and favorable nutrient-to-price ratio)
- Well loved; most commonly consumed vegetable
- General support among nutrition influencers
- Pairs with many foods (flavor profile, menu modeling, glycemic load)
- Fits into many current trends: "healthy;" gluten-free; natural; sustainable
- Gateway vegetable to higher veg consumption
- APRE has developed strong relationships
- A staple food globally

WEAKNESSES

- Nutritional profile differs based on preparation method; most commonly consumed as chips or fries
- Sometimes keep bad company
- Perceived as high calorie / fattening (despite lack of data)
- Perceived as high glycemic food (despite confusion over glucose control)
- Not perceived as a 'real' vegetable
- Perceived lack of portability; requires prep work
- Doesn't fit into some current trends: Paleo, GI, etc.
- APRE is relatively new in research community; not a lot of original research; inconsistent research translation

OPPORTUNITIES

- Define potatoes as a quality carbohydrate and a nutrient-dense vegetable
- Further characterize the benefits of potato consumption
- Explore the potential benefits of the resistance starch in potatoes
- Include potatoes in birth-24 months feeding reco's
- Leverage existing/new research to put epidemiologic findings into context
- Piggy back on popularity of plant-based diets
- Engage in relevant partnerships to further define potato benefits and promote potato consumption
- Position potatoes more regularly with other healthy fare

THREATS

- Carbohydrates are the current macronutrient outcast, but carbohydrate quality is not well defined; issue of "refined starches"
- Harvard epidemiological studies associate potatoes to obesity, hypertension, diabetes (despite lack of clinical evidence)
- Consumption is declining; push to eat more veg variety (less starchy)
- Industry-funded research is under the microscope
- Ultra-processed foods often criticized
- Diabetes orgs de-emphasizing potato intake for patients

5

APRE Follows a Strategic Framework to Support Potato Science

White Potatoes in Cardiometabolic Health			
Diabetes	Heart Health	Healthy Weight	Gut Microbiome
White Potatoes in Healthy Dietary Patterns			
Diet Quality and Culturally Appropriate Food Patterns			
White Potatoes in Healthy Lifestyles			
Athletic Performance	Aging		

apre 6

6

APRE Secures Strong Interest and Success in its Program, Annually

163 Letters of Intent Received

81 Full Proposals Submitted and Reviewed

51 Studies Funded

26 Manuscripts Published

6 Reviews/Commentaries Published

15+ Studies Presented at Conferences

7

APRE Uses a Methodical Approach to Ensure Research is Credible and Relevant

All Forms

Research Methods

Wide range of study designs to generate a comprehensive picture of potato benefits:

- Randomized clinical studies
- Observational/epi studies
- Commentaries
- Reviews

International Institutions

Surrey, NTNU, Maastricht University, Tufts, The Ohio State University, Liverpool John Moores University, McMaster University, LSU

8

KEYS TO A SUCCESSFUL RESEARCH PROGRAM

- Develop good research questions
- Seek out credible experts with whom to work /scientists with a track record
- Encourage researchers to complete, present, and publish their data
- Do not get involved in the scientific process
- Promote study results as warranted (researchers/universities; Potatoes USA marketing/PR channels)
- *Everything we do must be done with integrity/transparency*
  - *Register clinical trials*
  - *Publish all viable projects*
  - *Ethical Guiding Principles*

9

APRE's Research Integrity Guidelines

10

APRE's Request for Proposal Process Helps Minimize Bias and Conflicts of Interest

STEP 1
RFP announced
~175 international researchers receive announcement

STEP 2
Letters of Intent
~40 to 50 researchers respond; 10-15 full proposals requested

STEP 3
Full Proposals
Reviewed by 3rd party internationally-recognized nutrition researchers

GRANTS AWARDED
Research Selected
~5-8 research proposals are funded, annually

$4.5 million awarded, to date (~$5.6 million total, including non-compete studies)

11

Nutrition Research Process – General Timing

NOV: Identify priorities	JAN: Issue RFP	FEB: Evaluate LOIs & update board	MAR: Reject – or – Request full proposal
MAY: Evaluate proposals (with external reviewer input)	JUN: Board approves proposals	AUG: Contracts & integrity guidelines	TBD: Study Commences (Fall/Winter)
TBD: Interim reports	TBD: Final Payment	TBD: Manuscript submitted	TBD: Research translation & communication collaboration

12

Research Pipeline Recap

51 Studies Funded

28 Manuscripts Published

6 Reviews and Commentaries Published

2 Manuscripts Submitted for Publication

>2 Studies Near Completion

13

2022 APRE Publications to Date

The American Journal of CLINICAL NUTRITION

French-fried potato consumption and energy balance: a randomized controlled trial

Medicine & Science in Sports & Exercise

Potato Protein Ingestion Increases Muscle Protein Synthesis Rates at Rest and during Recovery from Exercise in Humans

frontiers

Multiple Metrics of Carbohydrate Quality Place Starchy Vegetables Alongside Non-starchy Vegetables, Legumes, and Whole Fruit

frontiers

Perspective: The Glycemic Index Falls Short as a Carbohydrate Food Quality Indicator to Improve Diet Quality

nutrients

A New Carbohydrate Food Quality Scoring System to Reflect Dietary Guidelines: An Expert Panel Report

14

EAT Lancet Report

Report published January 19, 2019.

Extensive PR campaign:

- Plugged as 40-city blitz
- Heavy social media campaign, emphasis on Twitter
- Podcast series & TV docuseries
- Op-Ed pieces by authors to be published in The Conversation, Huffington Post and Medium
- Findings presented at a February United Nations meeting

Large voice in 2021 Food Systems Summit & Beyond

Potatoes largely vilified

15

Good Plants, Bad Plants:

Potatoes and cardiometabolic health

16

APRE Grant Program

Stay up-to-date on APRE research and annual RFP!

Visit **APRE.org/grant-program** and sign up to receive email announcements.

apre Alliance for Potato Research & Education

17

Thank you!

18

10. Lombard, Margaret

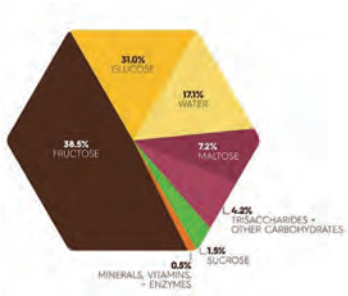
National Honey Board

Nutrition Research Overview

Margaret Lombard, CEO NHB

National Honey Board®

Honey is made from floral nectar that is collected by bees and stored in honeycomb inside the hive.



Fructose plus several relatively unique sugars and organic acids.

Contains natural bioactive compounds some are anti-oxidants.

Honey colors, aromas, and likely bioactive components vary depending on the source of floral nectar.

3

NHB Human Nutrition Research Program

The objective is to explore honey attributes across their wide-ranging sensory experiences and culinary uses, including use of honey paired with nutritious foods and in modern diet patterns.

Consumer insights
Align to natural balance target audience health priorities and their problems to solve.

Nutrition expertise
Workshop with experts in digestion, antioxidants, stress/mood/cognition, and diet patterns.
Louis Dye, Hannah Holscher, Carl Keen, Katherine Tucker

Prioritized a wide-range of research opportunities.

Guiding principles for research funded by the NHB

- ✓ **Research is consistent with the *Dietary Guidelines for Americans***. For example, amounts consumed per day must fit with guidance to limit sugar intake (≤ 2 Tbsp honey/day is 50 g sugar contributing 200 kcal)
- ✓ **Study populations are representative of the general public** (currently not funding disease treatment, although holistic home remedies may be considered).
- ✓ Seek to understand the nutritional composition and health potential for a **range of honey varieties**.
- ✓ **Standardized compositional analysis** across studies to support cross study comparisons and food composition databases.

5

Three Strategic Platforms

1. Manage sugar

Identify roles that honey can play within the context of managing sugar.

2. Honey composition

Explore the unique composition of honey, featuring a range of honey varieties along the color spectrum

1) Characterize content with human health potential

2) Examine impact on cardiovascular and digestive health outcomes.

3. Promote wellbeing

Demonstrate how honey helps develop habits and rituals that promote wellbeing.

Pair honey with foods across strategies

Current strategy invests in key areas of interest to honey consumers.

1. Manage sugar
2. Composition
3. Promote wellbeing

Sweetness equivalency

Nutrients, bioactives, & antioxidative potential

Mediterranean Diet Pattern

Gut Health

1. Manage sugar

Sweetness Equivalency

- How much honey delivers the same sweetness as a serving of granulated table sugar in different forms (e.g., as is versus beverage) and in combination with foods (e.g., in tea)?
- Relate impact of honey on acceptance of bitter foods by people with genetic variant of the bitter taste receptor gene that results in higher sensitivity to bitter compounds
- Quantify the bitter suppression of individual honey aroma volatiles and their blends

2. Composition Research

UNIVERSITY OF TORONTO

Nutrient analysis

- Standard nutrients using methods consistent with USDA FoodData Central
- Specialized sugar analysis
- Glycemic index

Bioactive compounds

- Phenolics, flavonoids, bioactive peptides, organic acids, enzymes (phosphatase, amylase, glucose oxidase, invertase, catalase, diastase)
- Mallard product (HMF)
- a-glucosidase (anti-glycemic) activity & glucose transporters (GLUT2/GLUT5/SGLT1)

Anti-oxidative potential

- Three indicator measures (DPPH, ORAC, FRAP)

INQUIS CLINICAL RESEARCH

Agriculture and Agri-Food Canada

USDA U.S. DEPARTMENT OF AGRICULTURE Agricultural Research Service

FoodData Central

3. Promote wellbeing

Mediterranean diet eating style

- Role of honey to increase acceptability of bitter vegetables and whole grains.
- Top food pairings to help Americans eat a more Mediterranean diet pattern.
- What is the impact of a honey-nut snack on glycemic response.

Gut health

- Can honey with yogurt improve digestive function.
- Does honey have potential to help the gut protect against food pathogens common in the food supply.

Inflammation

- Can honey with yogurt help reduce inflammation among overweight women.

Honey is a strong culinary pairing for foods uniquely characteristic of the Mediterranean style of eating.

BEST DIETS U.S.News

Mediterranean Diet

#1 in Best Diets Overall

Consistent with the *Dietary Guidelines for Americans*.

A main theme is to pair honey with foods recommended in this pattern, including olive oil, nuts, whole grains, fruits, and vegetables.

Mediterranean Diet for Well-being

Honey-food pairings to help Americans eat a Mediterranean Style Diet.

- **Honey with olive oil is a distinctive culinary pairing with potential to help Americans eat foods like fish, whole grains, and greens, which are foundational in a Mediterranean style diet. NHANES substitution analysis identified food substitutions to improve compliance with Med diet pattern.**

Does honey to increase acceptance of bitter foods in Mediterranean style eating patterns.

- **Is there an interaction between sweet taste and aroma's in honey to increase acceptance of foods recommended in a Mediterranean style pattern.**

Does adding honey to a nut snack retain the blood glucose benefit associated with nuts.

- Does a honey-nut snack offer a satisfying snack with a minimal post-meal glucose spike compared to another sweetened nut snack.

Gut Health for Well-being

The role of honey and small intestine microbes in digestive health

- **Does honey inhibit growth and protect the human digestive system from food-borne pathogens.**

The influence of honey-flavored yogurt on low-grade inflammation and gut health in mid-older women

- **Does yogurt with honey reduce low-grade inflammation due to overweight.**

Daily yogurt with honey helps support digestive health.

- Does honey with yogurt improve regularity and comfort.

Areas of interest for collaboration

- Antioxidants and anti-inflammatory benefits
- Digestive health and protection
- Honey's role in a healthy dietary pattern, particularly Mediterranean
- Stress management-related benefits of consuming honey or honey-food pairings.
- Unexplored personalized nutrition potential: between person variation in how honey corresponds with digestive health broadly from anti-bacterial to prebiotic, glycemic response, or anti-inflammatory benefits.

Thank you!

11. McNeill, Shalene

BEEF RESEARCH

National Cattlemen's Beef Association

Nutrition Research Program

Funded by the Beef Checkoff

About the Beef Checkoff Funding

$1 per head of cattle

50 cents per head to Cattlemen's Beef Board

50 cents per head retained by Qualified State Beef Councils

The Checkoff assesses $1 per head on the sale of live domestic and imported cattle, in addition to a comparable assessment on imported beef and beef products.

Checkoff funds can only be spent on beef promotion, research, and education; but NOT used to influence government policy or action.

The Checkoffs' Beginning

1922-1995 National Live Stock & Meat Board

1920 — 1960 — 1970 — 1980

Thomas E. Wilson
Wilson & Company

- **Wilson's plan:** *Scientific data to correct adverse propaganda should be collected, compiled and disseminated…among dieticians, physicians, hospitals, teachers, home demonstrators, household editors, agriculture colleges and others.*
- ***First Campaign in 1923:*** *Meat for Health*

Producer Priorities

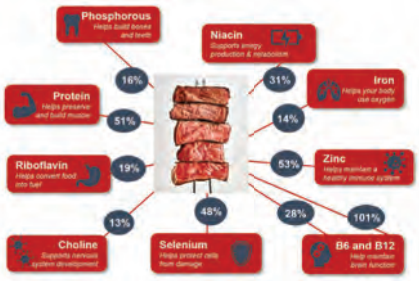
Grow global demand for U.S. beef by promoting beef's health and nutritional benefits, satisfying flavor and unparalleled safety.

Continued Integrity of Checkoff Research

- Investigators have/are:
  - Full control of study design, research, results, and interpretation of findings
  - Freedom and obligation to publish
  - Required signed disclosure
  - Guaranteed access to data and control of statistics
  - Not paid based on outcome

Source: Larrick BM, et al. An Updated Framework for Industry Funding of Food and Nutrition Research: Managing Financial Conflicts and Scientific Integrity. J Nutr 2022.

Beef's Unique Nutrient Package

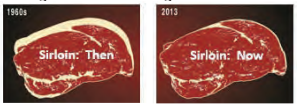


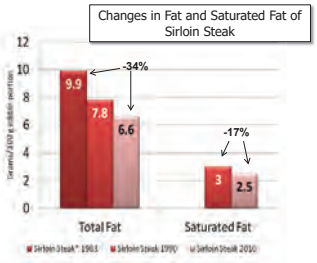
U.S. Department of Agriculture, Agricultural Research Service. FoodData Central SR# 13364 , 2019. fdc.nal.usda.gov.

Composition of beef has become leaner over time

Changes in cattle breeding and feeding

Changes in fat trimming

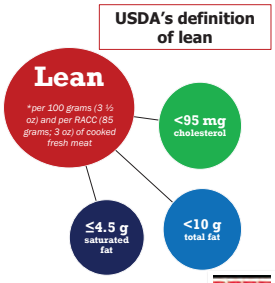




McNeill SH, et al. The evolution of lean beef: identifying lean beef in today's U.S. marketplace. Meat Sci 2012;90:1-8.

Most Beef Cuts are Lean

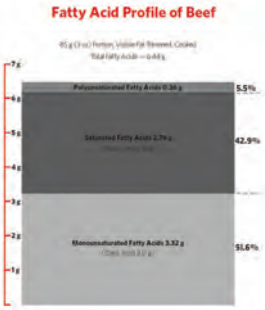
- Over 65% of the beef cuts in the fresh meat case are lean as defined by the USDA
- In general, beef cuts with "loin" and "round" in the cut name (strip loin, sirloin, top round) are lean



IRI/Freshlook, Total US MULO ending 12/30/18.
Nutrient content claims for fat, fatty acids, and cholesterol content. 9 CFR § 317.362. 2018. RACC: Reference Amount Customarily Consumed

Beef's Misunderstood Fat Profile

- More than half of beef's fatty acids are **monounsaturated** (good) fat – the same heart-healthy fat found in olive oil
- 1/3 of beef's saturated fatty acid is **stearic acid**
- 10% or less of saturated fat and total fat in the American diet comes from beef



U.S. Department of Agriculture, Agricultural Research Service. FoodData Central SR# 13364 , 2019. fdc.nal.usda.gov.

Human Nutrition Research

Goal: Understand beef's role in a healthy diet to nourish and optimize Americans' health at every life stage.

Original Scientific Research

Evaluate beef's role in optimal human health and well-being and the prevention of chronic disease through population-based or clinical research.

Focus Areas:
- Growth and development
- Metabolic health (heart disease, diabetes, cancer, weight management)
- Muscle health (quality, strength) and role in overall health
- Meat/beef matrix (whole foods)

Existing Research Assessment

Evaluate and interpret the total body of evidence on beef and health through comprehensive scientific reviews.

Focus Areas:
- Healthy dietary patterns
- Inflammation and immune function
- Contribution of beef to healthy, sustainable diets
- Discovery/emerging hot topics

Scientific Community Education

Utilize science to drive understanding and acceptance of beef relevant research within the research community.

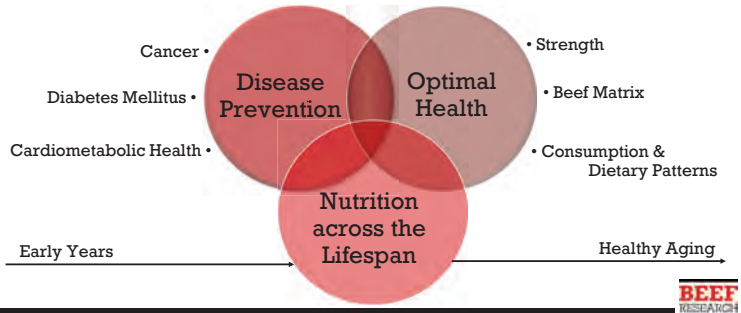
Key Topics:
- Amounts of beef consumed for optimal health
- Improving scientific methods
- Partnerships with leading scientific organizations and other credible food and health thought leaders.

Science Communications

Disseminate science-based nutrition research results to key stakeholders and thought leaders.
Monitor ongoing nutrition research, trends, information gaps and research needs.

Key Research Priorities


FY18-21 projects



How Do We Support Research?

- Request for Proposals

FY23 RFP:
- 26 pre-proposals received in Spring 2022
- 13 invited back for full proposals
- Funding decisions to be made early Fall 2022

- Directed Research

Invited researchers to be part of the Beef Matrix Research Collaborative

UtahStateUniversity
UC DAVIS
The University of Texas at Austin Dell Medical School
Berkeley
TEXAS TECH UNIVERSITY
USDA ARS

Highlight Areas

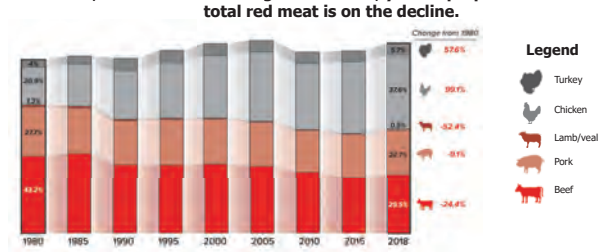
1. Understand beef consumption in the US

2. Refine red meat terminology and categories used in human nutrition research

3. Evaluate protein quality

Americans Are Eating More Chicken and Less Red Meat Over Time

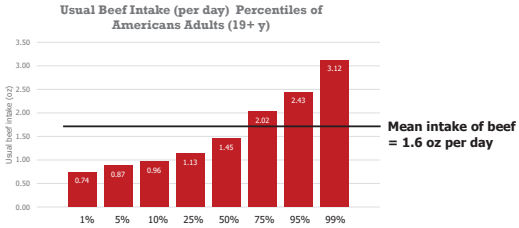
Overall, Americans are eating more meat*, yet the proportion of beef and total red meat is on the decline.



Notes: Percentages may not add up to 100% due to rounding; *9.5% more total meat

U.S. Department of Agriculture, Economic Research Service . Loss-adjusted Food Availability: Meat, poultry, fish, eggs, and nuts. (Data last updated June 1, 2020)

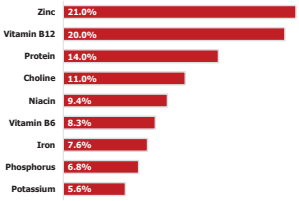
Most Americans Are Consuming Beef Within Recommendations



Agarwal & Fulgoni. Contribution of beef to key nutrient intakes in American adults: an updated analysis with NHANES 2011-2018. Nutr Res 2022.

Beef's Nutrient Contribution to the Diet

According to recent NHANES, beef consumption today contributes 5% of calories and 11% of saturated fat, yet more than 5% of 9 essential nutrients to Americans' diets.



Agarwal & Fulgoni. Contribution of beef to key nutrient intakes in American adults: an updated analysis with NHANES 2011-2018. Nutr Res 2022.

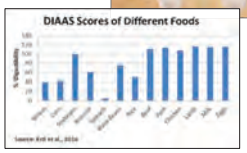
Initiatives to Improve Red Meat Terminology

- Why it matters: Red and processed meats are continually characterized together in observational and randomized controlled trials that go on to influence DGA and federal nutrition programs; however, there are relevant nutritional differences in fresh and processed red meats

https://www.ars.usda.gov/ARSUserFiles/80400500/videos/Seminars/BHNRC Seminar Lauren OConnor 5 10 22.mp4

Protein Quality and Equivalency

DGA Protein Ounce Equivalents	Example Food	Protein, g	Calories, kcal
1 oz lean meats, poultry or seafood	Beef Sirloin	9	52
1 egg	Eggs	6	78
¼ cup cooked beans	Kidney beans	4	56
¼ cup tofu	Tofu	5	40
1 tsp nut or seed butter	Peanut Butter	4	94
½ ounce nuts or seeds	Mixed Nuts	4	84



Protein Equivalency

Researchers compared 2 oz-eq of protein foods (beef sirloin, pork loin, eggs, tofu, kidney beans, peanut butter, mixed nuts) on protein synthesis and breakdown in young adults

Key takeaways:

- Animal-based protein food sources elicited greater protein synthesis rates and less protein breakdown than plant-based protein food sources
- Beef has higher protein quality than plant-based protein foods

Source: Park S, et al. Metabolic evaluation of the Dietary Guidelines' ounce equivalents of protein food sources in young adults: A randomized controlled trial. J Nutr 2021; nxaa401. Oct

Beef's Protein Density

- Researchers modeled 4 healthy eating patterns that met established essential amino acids recommendations.

The vegan protein matched pattern resulted in

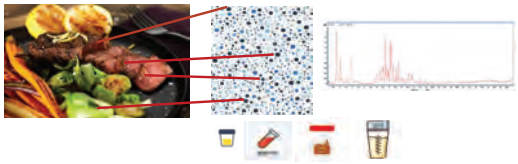
+ 300 calories and 20g less protein

Nancy Rodriguez, PhD, RD, FACSM
Professor,
University of Connecticut

Fussell M, Contillo A, Druehl H, Rodriguez N. Essential Amino Acid Density. Differences in Animal- and Plant-Based Dietary Patterns Designed for Older Women. Nutrition Today: 3/4 2021 - Volume 56 - Issue 2 - p 70-75 doi: 10.1097/NT.0000000000000466

Future areas of interest

- Biomarkers- are "capable of objectively **assessing food consumption** without the bias of self-reported dietary assessment and to **determine the biological effects of foods** and their impact on health" (Pico et al., 2019) as a way for nutrition science to move away from epidemiological studies
- Metabolomics



"Effect of minimally processed meat and further processed meat on biomarkers and risk factors for cancer and cardiovascular disease – Phase 1"

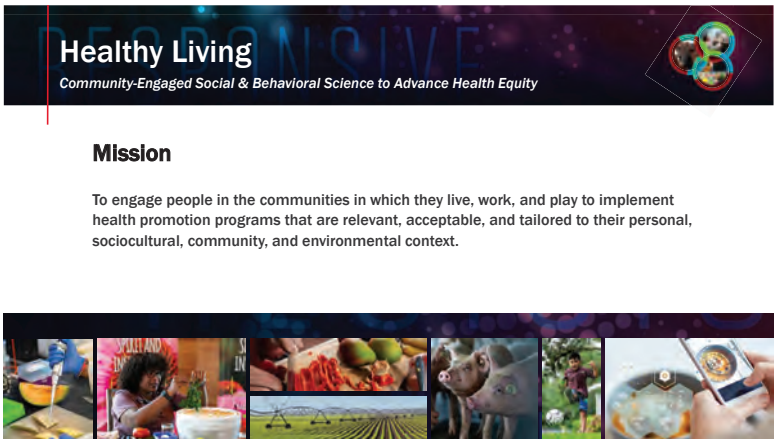
David J Baer, PhD
USDA, Agricultural Research Service,
Beltsville Human Nutrition Research Center,

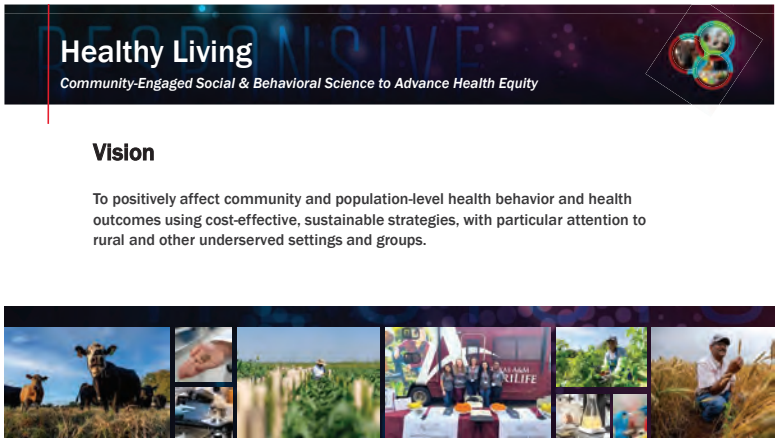
Statement of Principles

- We will provide **factual, scientifically supported information** about beef to help consumers make informed choices about what they eat.
- We support the Dietary Guidelines for Americans **recognizing that there are a variety of ways to achieve a healthy diet**, and further, we believe that the overwhelming scientific evidence shows that **dietary balance, variety, and moderation coupled with appropriate physical activity provides the foundation for a healthful life**.
- We support research on the nutritional qualities of beef and will **accurately communicate research findings** to help consumers make informed decisions about their diet.

12. Parker, Elizabeth

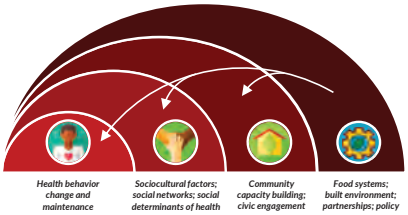
13. Seguin-Fowler, Rebecca





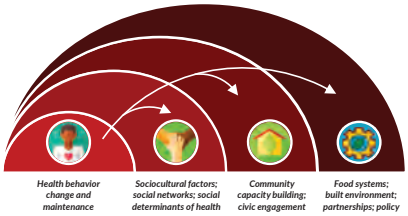
Healthy Living

Community-Engaged Social & Behavioral Science to Advance Health Equity



Healthy Living

Community-Engaged Social & Behavioral Science to Advance Health Equity

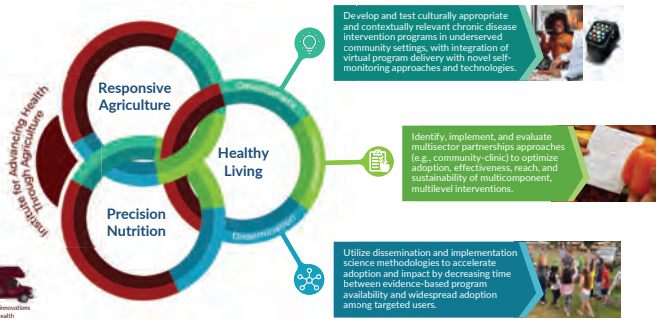


Healthy Living

Community-Engaged Social & Behavioral Science to Advance Health Equity

Healthy Living

Community-Engaged Social & Behavioral Science to Advance Health Equity



Healthy Living

Community-Engaged Social & Behavioral Science to Advance Health Equity

THANK YOU

TEXAS A&M AGRILIFE

INSTITUTE FOR ADVANCING HEALTH THROUGH AGRICULTURE

14. Sloan, Carol

California Walnuts Health Research Program

Texas A&M AgriLife
Institute for Advancing Health Through Agriculture

August 2022

1

California Walnut Commission Health Research Program

The California Walnut Commission supports health research in order to increase awareness and improve understanding of the unique benefits of consuming walnuts.

The California Walnut Commission is committed to building a strong foundation of high-quality scientific evidence, from pre-clinical research in the early stages of exploration to human observational, epidemiological and clinical intervention studies that determine the health effects of walnut consumption across the lifespan.

The findings from California Walnut Commission supported projects cultivate a pipeline of outcomes that continue to contribute to the scientific literature, increase consumption of heart-healthy walnuts and overall improve public health.

2

California Walnut Industry

California Walnuts 3

3

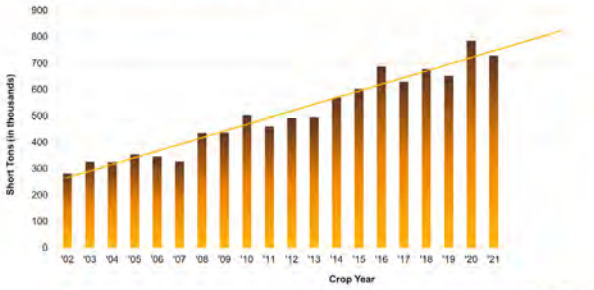
California Walnut Industry

The California walnut industry is comprised of more than 4,500 walnut growers – many of whom are multigenerational family farmers – and approximately 90 handlers who pack and ship walnuts.

California walnuts are over 99% of U.S. production of English walnuts and two-thirds of the world trade.

4

California Walnut Crop



5

Walnut Nutrition

California Walnuts 6

6

Nutrients in One Serving of Walnuts

7

Omega-3 Fatty Acids

- Walnuts are unique as they are the only nut significantly high in omega-3s, alpha-linolenic acid, ALA.
- A serving of walnuts exceeds the daily recommended intake of ALA for both men and women.
- ALA may be as effective in reducing the risk of cardiovascular disease as marine-derived omega-3s EPA and DHA.

8

Other Nutrients

- Good source of other micronutrients including:
  - Magnesium (45mg)
  - Vitamin B6 (0.2mg)
  - Copper (0.45mg)
  - Manganese (0.1mg)
- Offer a variety of antioxidants (3.721 mmol/oz), including:
  - Polyphenols (69.3 ± 16.5 µmol catechin equivalents/g)
  - Gamma tocopherol (5.91 mg/ounce)
- Contain melatonin (3.5 +/- 1.0 ng/g)

9

Per Capita Consumption

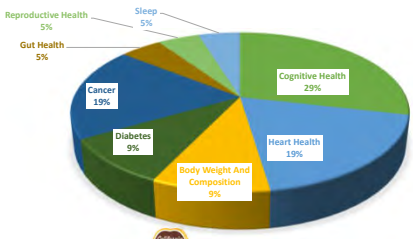
10

Health Research Program

11

Health Research Pipeline

Key Focus Areas



12

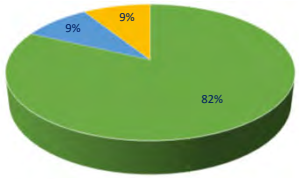
Health Research Pipeline

Types of projects currently supported

Human Clinical Trials
82%

Epidemiological
9%

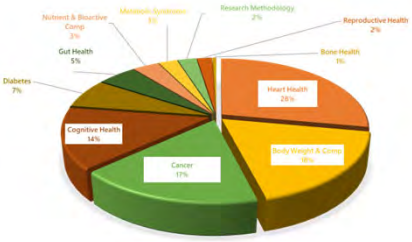
Pre-clinical
9%



13

CWC Supported Publications: 215

CWC continues to build the foremost body of comprehensive walnut nutrition health research based on new and previous scientific findings.



14

New Publications!

15

Health Claims and Dietary Recommendations

FDA Health Claim for Nuts and Coronary Heart Disease – July 2003
"Scientific evidence suggests but does not prove that eating 1.5 ounces per day of most nuts [, such as name of specific nut,] as part of a diet low in saturated fat and cholesterol may reduce the risk of heart disease."

FDA Health Claim for Walnuts and Coronary Heart Disease - March 2004
"Supportive but not conclusive research shows that eating 1.5 ounces of walnuts per day, as part of a low saturated fat and low cholesterol diet, and not resulting in increased caloric intake may reduce the risk of coronary heart disease."

American Heart Associated Heart-Check Mark
A heart-healthy food, certified through the American Heart Association's Heart-Check program.

Dietary Guidelines for Americans
Research shared with the Dietary Guidelines Advisory Committee to contribute to dietary guidance for Americans.

EU health claims - June 2012
"Walnuts contribute to the improvement of the elasticity of the blood vessels."

"Alpha-linolenic acid contributes to the maintenance of normal blood cholesterol levels."

"Replacing saturated fats with unsaturated fats in the diet contributes to the maintenance of normal blood cholesterol levels." [MUFA and PUFA are unsaturated fats]

"Linoleic acid contributes to the maintenance of normal blood cholesterol levels."

Spanish Heart Foundation 2020
Heart UK 2019

16

Professional Conferences

Abstracts and Presentations:

- UC Davis Nuts and Berries Conference (May)
- American Society of Nutrition (June)
- American Diabetes Association (June)
- 8th Asian Congress of Dietetics (August)
- Food and Nutrition Conference and Expo (October)
- American College of Gastroenterology (October)
- Nuts 2022 (October)

17

California Walnut Commission RFP

Event	Date
Letter of Intent submission opens	February 14, 2022
Letters of Intent due	March 28, 2022
Invitations to submit full proposals sent	April 18, 2022
Full Applications due	May 23, 2022
Funding decision received	August 26, 2022

California Walnuts

18

California Walnuts and American Heart Association Joint Funding Award

Award Partnership with the American Heart Association and the California Walnut Commission. This has been expanded to include all award categories: AHA Predoctoral Fellowship, AHA Postdoctoral Fellowship, Career Development

This scientific and research initiative with the American Heart Association (AHA) will fund those investigators who are interested in research (observational or clinical trials) that will improve understanding and expand knowledge promoting healthy dietary patterns (for example Mediterranean-style diets, plant-forward or food modeling) that include walnut consumption. Proposals may examine any of the following:

- Effects of walnut consumption, as part of healthy dietary patterns, on health-related outcomes
- Novel approaches to incorporating walnuts into food-service operations or nutrition interventions serving racially, ethnically, and economically diverse populations
- How the inclusion of walnuts in treatment plans may impact common chronic conditions such as immune function, mental health, pain management, post-operative care

American Heart Association.

19

California Walnuts and the Agriculture and Food Research Initiative (AFRI) USDA-National Institute of Food and Agriculture

Matching funds will be provided for approved research projects specific to:

Conducting human clinical trials to determine if individuals who consume walnuts on a regular basis have improved cognitive outcomes.

USDA
United States Department of Agriculture
National Institute of Food and Agriculture

20

American Institute for Cancer Research and California Walnut Commission Research Grant Collaboration

- ✓ American Institute for Cancer Research (AICR)/California Walnut Commission (CWC) have been in collaboration since 2005.
- ✓ CWC has provided funds via AICR in the total of $1.5 million.
- ✓ Grants have supported researchers at Penn State, UC Davis, UCONN, UC San Diego, Marshall University, Beth Israel Deaconess Medical Center, Albert Einstein College of Medicine and University of Texas Health Science Center at San Antonio.
- ✓ Seventeen peer-reviewed publications have resulted from collaboration in the areas of breast, prostate and colorectal cancer as related to walnut consumption.
- ✓ CWC initiatives mutually align with AICR's Grant Program which is dedicated to funding research on cancer prevention, treatment and survival related to diet, nutrition, body composition and physical activity.

American Institute for Cancer Research

21

Translating the Science

California Walnuts

22

Health Research Outreach & Promotion

23

California Walnuts

24

The future....

California Walnuts is undertaking research that:

- reflects the mission, credibility and values of the industry
- is a reliable source for continuing and new research on walnuts
- is strategically reactive and proactive
- underlies communications to consumers, healthcare providers, policymakers
- evolves with new concepts, methods and conduct

25

Thank you!

California Walnuts 26

26

15. Stover, Patrick

TEXAS A&M AGRILIFE

INSTITUTE FOR ADVANCING HEALTH THROUGH AGRICULTURE

Looking Ahead
August 2022

Responsive Agriculture
Responding to Human Health Needs Through Agriculture

Agriculture as the solution to diet-related chronic disease in a way that considers the environment and economy

Responsive Agriculture
Common Themes

Misinformation among the public regarding the health effects of certain foods

Agriculture, Food and Nutrition (AFNEC) Evidence Center

Ag Is the Solution

Agriculture is the solution to diet-related chronic disease.

The Institute for Advancing Health Through Agriculture, IHA, will be recognized by leading U.S. and global scientists, producers, and policymakers as the **premier center of excellence in research**, and in the design and **development of technologies** that accelerate evidence-informed agriculture and **food systems that nurture human health, sustain environmental resources, and ensure the economic viability of agriculture and national security**.

Serves producers and consumers

The Agriculture, Food and Nutrition Scientific Evidence Center will be recognized globally as an **objective and authoritative source** for retrieving, synthesizing, and evaluating **scientific evidence on agriculture, natural resources, and food systems**, including impact of interventions or exposures on the **human, environmental, and economic health.**

Serves decision makers

Responsive Agriculture
Common Themes

Health Promotion Research
- Common health endpoints
- Focus on scientific rigor
- Identifying best researchers
- Publication
- Individual commodity focused
- Food components/Foods/Diets
- Culinary/culinary medicine
- Potential collaboration
- Audience – consumers/health
- Strategy – opportunistic

Role of IHA
Lead the National Dialog
- Systematic approach to identifying specific objectives to improve the health effects of the food system – priority setting.
- Identify barriers to achieving the objectives (regulatory, consumer, economic, policy)

Responsive Agriculture
Common Themes

Health Promotion Research
- Common health endpoints
- Focus on scientific rigor
- Identifying best researchers
- Publication
- Individual commodity focused
- Food components/foods/diets
- Culinary applications
- Potential collaboration
- Audience – consumers/health
- Strategy – opportunistic

Role of IHA
Lead the National Dialog

Precision Nutrition

- What does it mean for population-based recommendations?
- What does it mean for food production?

Responsive Agriculture/Precision Nutrition
Common Themes

Health Promotion Research
- Common health endpoints
- Focus on scientific rigor
- Identifying best researchers
- Publication
- Individual commodity focused
- Food components/Foods/Diets
- Culinary applications
- Seeking health claims
- Audience – consumers
- Strategy - opportunistic

Role of IHA
Provide common research infrastructure

- Study cohorts that take advantage of the diversity of Texas
- Mobile research laboratories
- Facilities/technologies (plant transformation, diet assessment, wearables)

Cohort in Texas
Includes pregnant women and children

Capture how the first 1,000 days can promote lifelong health and prevent disease

Process:
- Landscape Analysis (communities/groups)
- Cohort Specification and Recruitment (groups/individuals)
- Examination and Outcome Data (individuals)
- Follow-on studies of children

Healthy Living
Community-Engaged Social and Behavioral Science to Advance Health Equity

Vision
To reach underserved, at-risk populations in the communities in which they live and work, and to engage them in innovative research projects and programs that are relevant, acceptable, and tailored to their social, community, environmental, and policy context to affect health behavior and health outcome improvements using cost-effective, sustainable strategies.

REDUCED RISK FOR CHRONIC DISEASE

Responsive Agriculture/Precision Nutrition
Future Convenings

NASEM Workshop Series: AI & Machine Learning in Food and Ag
- In development
- Exploring the role of advanced computation, predictive technologies and big data analytics in research related to food and nutrition

Future Convenings Planned
- Developing scientific convenings over the next year to identify priority areas of focus
- Engage scientists across the nation in this process based on desired outcomes
- Workshops and scientific papers will inform a broader national convening

Next Steps

- Report to be developed recapping outcomes from this event; shared with group and driving next steps
- IHA will be hosting future convening and leading national dialogue
  - Opportunities for industry to stay engaged
  - Broadening to stakeholders throughout the food-ag value chain

16. Torres-Gonzalez, Moises

Agenda Items

✓ Legacy of NDC Research

✓ Current Research Priorities

NDC Takeaways

1.) Open to collaborating to tackle today and tomorrow's key challenges

2.) Serve as a resource, domestically and globally, for dairy nutrition science

3.) Seeking new partners to catalyze innovation

NDC NATIONAL DAIRY COUNCIL

Bringing to life the dairy community's shared vision of a healthy, happy, sustainable world, with science as our foundation

NDC NATIONAL DAIRY COUNCIL

Championing the Wellbeing of Children and Adults for Over 100 Years

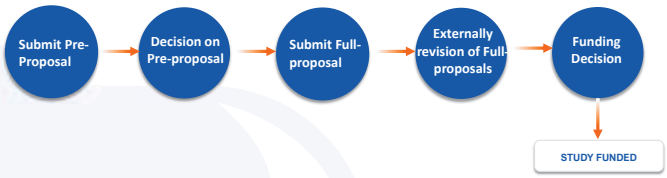
Cheers to 100 Years. June 2015. National Dairy Council. (2020) Retrieved from https://www.usdairy.com/news-articles/cheers-to-100-years

NDC Research Vision

Be the leading authority on dairy nutrition research and innovation, domestically and globally

NDC Research Funding Mechanisms

1. Open Call for Research Proposals
2. Supplemental Support Solicitation
3. Directed Solicitation



NDC follows strict research guiding principles to ensure:

- Scientific integrity
- Transparency
- Strengthen Public-Private Partnerships


NDC
NATIONAL DAIRY COUNCIL®
GUIDING PRINCIPLES FOR RESEARCH AND COMMUNICATION OF RESULTS

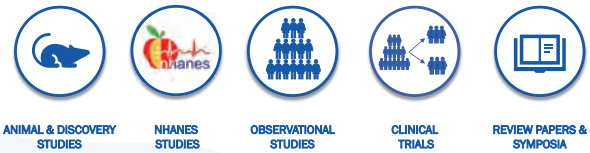
√ Scientific Integrity

√ Transparency

√ Public-Private Partnerships

https://www.usdairy.com/news-articles/national-dairy-council-guiding-principles-for-research

NDC has broad research portfolio to support innovation and consumer wellness



Examples of Nutrition Research Partners

US Universities

PURDUE, ILLINOIS, PENNSTATE, OHIO STATE, TEXAS, UNIVERSITY of VERMONT

International Universities and Centers

Maastricht University, WAGENINGEN UR, CSIRO, McMaster University, LAVAL, UNIVERSITY OF COPENHAGEN

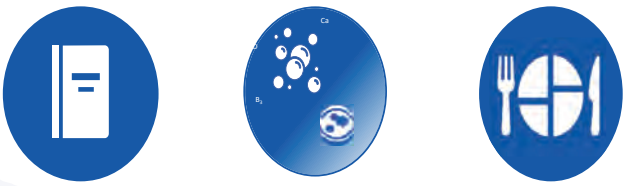
Contract Research Organizations

BIOFORTIS a Mérieux NutriSciences Company, Midwest Center for Metabolic & Cardiovascular Research, EPID STAT

Cooperative Research Programs

Joslin Diabetes Center, FNIH, International Scientific Association for Probiotics and Prebiotics, ILSI North America, WHEY, USDA ARS, USDA NIFA

NDC Research Pillars



PUBLIC HEALTH | DAIRY UNIQUENESS & CONSUMER BENEFIT | SUSTAINABLE FOOD SYSTEMS

Public Health

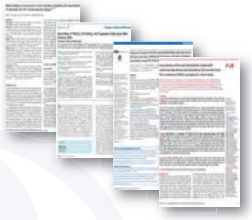
- **Whole-milk Dairy:** Build the scientific evidence that supports the incorporation of Whole-milk dairy foods into healthy dietary patterns.
- **Childhood Health:** Build the scientific evidence supporting the role of milk and dairy foods on childhood growth, development and cognitive function, with emphasis on infancy and early childhood.
- **Cardiometabolic Health:** Build the scientific evidence on dairy's beneficial effect on cardiometabolic health with an emphasis on reduction in cardiovascular disease and type 2 diabetes risk as well as dairy's role in reducing chronic inflammation
- **Bone Health:** Reinforce the importance of dairy foods for peak bone mass development in children while advancing the science for the reduction in risk for osteoporosis and fracture with aging
- **Sustainable Nutrition:** Integrate the domains of sustainability to develop the scientific evidence to support the essentiality of dairy in food systems

NDC has been part of the leading organizations advancing our understanding on SFA & LDL-C

Growing body of evidence questions LDL-C as the best biomarker to predict CVD risk

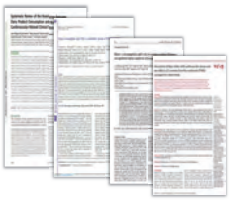
NDC initial SFA funded research sparked scientific interest on rethinking the link between SFA and CVD

Saturated Fat Consumption May Not Be Linked to CVD Risk



NDC playing an important role in leading the science on dairy foods and CVD:

Dairy foods –regardless of the fat content- have a neutral or beneficial association with reduced risk for CVD



Dairy Uniqueness & Consumer Benefits

- **Protein**: Build the scientific evidence to secure global recognition that dairy proteins are among the highest quality proteins available and are essential to health and sustainable food systems
- **Healthy Aging:** Build the scientific evidence demonstrating the value of dairy foods and ingredients as essential components of dietary patterns that support healthy aging (i.e. preserve muscle mass, maintain physical function, support bone health, etc).
- **Immunity:** Build the scientific evidence demonstrating the the value of dairy foods and ingredients to support the immune system.
- **Cognition-Calm:** Build the scientific knowledge of the contributions of dairy foods and ingredients to brain health, mental and cognitive performance across life-span.
- **Digestive Health:** Ensure dairy's positioning in this emerging scientific field through strategic partnerships

Environmental Stewardship Commitments

NDC Takeaways

1.) Open to collaborating to tackle today and tomorrow's key challenges

2.) Serve as a resource, domestically and globally, for dairy nutrition science

3.) Seeking new partners to catalyze innovation

Thank You

17. Wada, Leslie

Statement on USHBC Research

USHBC funds research studies that are based on sound science and are conducted by researchers at well-established institutions. All publications of research studies are written by the researcher, independent of the USHBC. The Council follows USDA established guidelines and all descriptions of research findings are carefully worded so that conclusions are not overstated or misunderstood by the consumer. In addition, the USHBC promotes blueberries but does not discourage the consumption of any other fruit or vegetable.

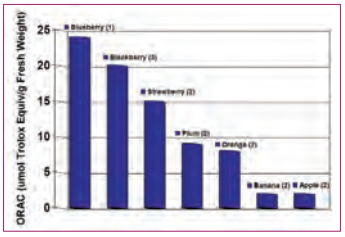
blueberries
U.S. Highbush Blueberry Council

Blueberries' Antioxidant Profile Sparks Research Interest


Antioxidant Capacity As Influenced by Total Phenolic and Anthocyanin Content, Maturity, and Variety of Vaccinium Species

Prior, R et al. J Ag Food Chem. 1999

"In general, blueberries are one of the richest sources of antioxidant phytonutrients of the fresh fruits and vegetables we have studied"



blue berries
Inspiring Possibilities

Health Research Pipeline

Grab a boost of blue

$10 million in USHBC research funds and contributions to other research studies by providing:

- Blueberry Powder
- Blueberry Placebo Powder
- Frozen Blueberries
- Rebate support for blueberry purchase

Blueberries have been involved in more than $40 million of research projects + **17 studies in progress** + **63 publications in peer-reviewed journals**

blueberries
U.S. Highbush Blueberry Council

Know we're always learning more.

Blueberries may promote good health in additional ways. **Areas of research:**

Cardiovascular Health | Brain Health | Healthy Living | Insulin Response | Gut Health

blueberries
U.S. Highbush Blueberry Council

Polyphenols

Anthocyanins

Good source of fiber, vitamin C

Excellent source of vitamin K and manganese

blueberries

Freeze-Dried Whole Blueberry Powder

Brain Health

- Allows for use of a placebo
- Allows for blinding of researcher and participant
- Consistent product over 2-3 years study
- Two specific varieties of blueberries
- Minimal effect of processing on bioactive

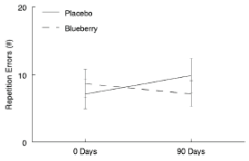
blueberries
U.S. Highbush Blueberry Council

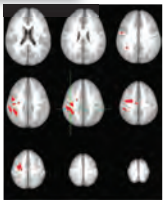
Adding Blueberries to the Diets of Older Adults Can Improve Some Aspects of Cognition

Brain Health


Dietary blueberry improves cognition among older adults in a randomized, double-blind, placebo-controlled trial

Enhanced neural activation with blueberry supplementation in mild cognitive impairment





blueberries U.S. Highbush Blueberry Council

Blueberries May Help to Improve Mild Cognitive Performance in Middle-Aged Adults

Brain Health


nutrients

Blueberry Supplementation in Midlife for Dementia Risk Reduction

Robert Krikorian – University of Cincinnati

To evaluate whether blueberry supplementation will be associated with improved metabolic function and/or improved cognitive function in overweight, middle-aged adults with memory complaints

Findings:

- Improvement in lexical access score and word recall
- Decrease in subjective memory problems
- Decrease in fasting insulin

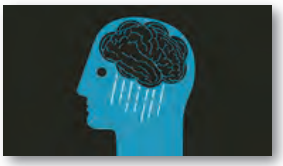
blueberries U.S. Highbush Blueberry Council

Effect of Whole Blueberry Powder Consumption on Depression

Brain Health

Joseph Francis – Louisiana State University

To evaluate the efficacy of blueberry treatment on depressive symptomology and physiological markers known to be associated with depressive pathology



blueberries U.S. Highbush Blueberry Council

Connecting Research to Marketing – Brain Health

Brain Health


Nutrition and Dietetics SmartBrief

Grab a boost of blue.

The Blueberry Research Bulletin

Research shows support of potential for blueberry consumption to help middle-aged individuals against cognitive decline

What the Science Says

blueberries U.S. Highbush Blueberry Council

Research in the Media – Brain Health

Brain Health


verywell health

7 Foods That Support Brain Health, According to a Dietician

2018 Study: Enhanced Neural Activation with Blueberry Supplementation in Mild Cognitive Impairment

VeryWell Health Article


Better Homes & Gardens

7 of the Best Brain Foods to Improve Your Memory and Concentration

Blueberries

2020 Study: Recent Research on the Health Benefits of Blueberries and Their Anthocyanins

Better Homes & Gardens Article

blueberries U.S. Highbush Blueberry Council

Heart Healthy Benefits Associated with Blueberries Prompt New Research

Cardiovascular Health


Blueberries Decrease Cardiovascular Risk Factors in Obese Men and Women with Metabolic Syndrome

Daily Blueberry Consumption Improves Blood Pressure and Arterial Stiffness in Postmenopausal Women with Pre- and Stage 1-Hypertension: A Randomized, Double-Blind, Placebo-Controlled Clinical Trial

Blueberry Consumption for Improving Vascular Endothelial Dysfunction in Postmenopausal Women with Elevated Blood Pressure

Dr. Sarah Johnson – Colorado State University

- Examine the efficacy of blueberries to directly improve vascular endothelial dysfunction and to identify mechanisms through which improvements occur

blueberries U.S. Highbush Blueberry Council

New Research Examines Blueberries' Effect on Cardiometabolic Health in Adults With Metabolic Syndrome (Circle Study)

Am J Clin Nutr 2019; 109:1535-1545

Blueberries improve biomarkers of cardiometabolic function in participants with metabolic syndrome—results from a 6-month, double-blind, randomized controlled trial

Peter J Curtis,[1] Vera van der Velpen,[1] Lindsey Berends,[1] Amy Jennings,[1] Martin Feelisch,[2] A Margot Umpleby,[1] Mark Evans,[4] Bernadette O Fernandez,[2] Mia S Meiss,[2] Magdalena Minnion,[2] John Potter,[1] Anne-Marie Minihane,[1] Colin D Kay,[1] Eric B Rimm,[5] and Aedín Cassidy[1]

"The simple and attainable message to consume 1 cup of blueberries daily should be given to those aiming to improve their cardiovascular health."

blueberries U.S. Highbush Blueberry Council

Adding Blueberries to Energy-Dense, High-Fat, High-Sugar Meals Improves Various Markers of Cardiometabolic Health in an 'At Risk' Population

Clinical Nutrition

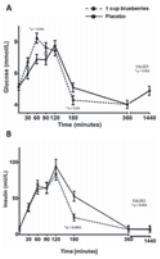
Blueberry anthocyanin intake attenuates the postprandial cardiometabolic effect of an energy-dense food challenge: Results from a double blind, randomized controlled trial in metabolic syndrome participants

- We are predominantly in a post-meal state during our waking hours
- Postprandial increases in lipids/glucose raise heart disease risk

blueberries U.S. Highbush Blueberry Council

Response to a High Calorie, High Fat, High Sugar Meal with Blueberries

Reduced acute postprandial response
- Improved glucose control
- Reduced insulin
- Improved HDL-Cholesterol



blueberries U.S. Highbush Blueberry Council

Connecting Research to Marketing – Heart Health

Study: Blueberries & Cardiometabolic Health

Research shows eating one cup of blueberries daily is an effective dietary strategy to improve cardiovascular health. The data show clinically relevant improvements in vascular function and arterial stiffness in adults with metabolic syndrome. LEARN MORE

New Research Illustrates that Adding Blueberries to Energy-Dense, High-Fat, High-Sugar Meals Improves Various Markers of Cardiometabolic Health in an 'At Risk' Population

FOLSOM, Calif. – December 13, 2021 – A new research study published in Clinical Nutrition finds that the equivalent of one cup of fresh blueberries, consumed as 26 g of freeze-dried blueberries, may reduce the acute cardiometabolic burden of energy-dense meals. Simply put: blueberries may benefit heart health.

This emerging study finds that adding anthocyanin-rich blueberries (364 mg anthocyanin and 879 mg phenolics) to a high calorie, high-fat/high-sugar meal (969 kcal, 64.5g fat, 84 g carbohydrate) results in reduced insulin and glucose levels, lower total cholesterol, and improved good cholesterol (HDL-C) and its related lipoproteins (fractions of HDL-P and Apo-A1) in the 24 hours following the meal. These findings are noteworthy because elevated post-meal glucose and impaired glucose tolerance are associated with increased heart disease risk, which is already elevated in people with metabolic syndrome, and given the high rate of consumption of energy-dense, high-fat/high-sugar meals.

blueberries U.S. Highbush Blueberry Council

Research in the Media – Heart Health

martha stewart

10 Foods to Eat for Healthy Living

Blueberries

2022 Study: Blueberry anthocyanin intake attenuates the postprandial cardiometabolic effect of an energy-dense food challenge: results from a double blind, randomized controlled trial in metabolic syndrome participants

Martha Stewart Article

NEW Food

New study finds blueberries could be good for your heart

The study, which was supported by funding from the US Highbush Blueberry Council, is a secondary analysis of the primary study, which looked at the longer-term effects of blueberry consumption and found that participants with metabolic syndrome who consumed the equivalent of one cup of fresh blueberries per day showed clinically relevant improvements in measures of heart health over 6 months.

This acute sub-study, "Blueberry anthocyanin intake attenuates the postprandial cardiometabolic effect of an energy-dense food challenge: results from a double blind, randomized controlled trial in metabolic syndrome participants," was conducted at the NHS Clinical trials facility, University of East Anglia, UK, in a subset of the participants of the 6-month intervention, and was completed between January 2014 and November 2016.

"While further studies are warranted, our results suggest that adding just a single cup serving of anthocyanin-rich foods like blueberries to high-fat/high-sugar and energy dense meals should be advocated to reduce the acute postprandial increases in risk markers like glucose, insulin and cholesterol," said Cassidy.

2022 Study: Blueberry anthocyanin intake attenuates the postprandial cardiometabolic effect of an energy-dense food challenge: results from a double blind, randomized controlled trial in metabolic syndrome participants

New Food Article

blueberries U.S. Highbush Blueberry Council

Blueberries and Type 2 Diabetes – Emerging Role

Dietary Blueberry Attenuates Whole-Body Insulin Resistance in High Fat-Fed Mice by Reducing Adipocyte Death and Its Inflammatory Sequelae[1,2]

Bioactives in Blueberries Improve Insulin Sensitivity in Obese, Insulin-Resistant Men and Women[1–4]

Effect of Blueberry Consumption on Cardiometabolic Health Parameters in Men with Type 2 Diabetes: An 8-Week, Double-Blind, Randomized, Placebo-Controlled Trial

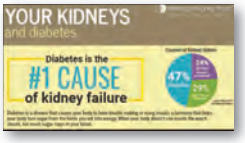
Results:
- ↓ Hemoglobin A1C
- ↓ Fructosamine
- ↓ Triglycerides

blueberries U.S. Highbush Blueberry Council

Effect of Whole Blueberry Powder Consumption on Diabetic Nephropathy

Joseph Francis –
Louisiana State University

To evaluate the effect of blueberry feeding on renal function and renal biomarkers in patients with diabetic renal disease



Eating Blueberries May Lead to Positive Changes in the Gut Microbiome

Effects of Blueberries on Symptoms and Underlying Mechanisms of Functional Gastrointestinal Disorders
Dr. Clive Wilder-Smith – Brain Gut Research Group, Bern Switzerland

Effect of Blueberries on Gut Microbiome and Gut Barrier Function in Overweight and Obese Adults
Dr. Paul O'Toole – University College – Cork, Ireland

Impact of Blueberry Consumption on Intestinal Permeability, Gut Microbiota and Gut-Derived Inflammation in Individuals with Elevated Risk of a Pro-Inflammatory Gut Millieu
Dr. Heather Rasmussen – University of Nebraska

Can Blueberries Help Combat Fatigue & Promote Muscle Recovery?


Four Days of Blueberry Powder Supplementation Lowers the Blood Lactate Response to Running But Has No Effect on Time-Trial Performance

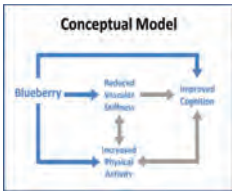
Does Acute Blueberry Supplementation Influence the Metabolic, Cardiovascular, Cognitive and Performance Responses to Submaximal and Maximal Intensity Exercise?

Does Blueberry Supplementation Mitigate the Inflammatory, Oxidative Stress, Physiological and Performance Effects of Long-Distance Trail Running?

Dr. Jason Brandenburg – University of the Fraser Valley

Effect of Blueberry Consumption on Vascular Function, Physical Activity and Cognition in Sedentary Older Adults

William Kraus –
Duke University



Healthy Living

Blueberries and Healthy Living

Effect of Blueberry as a First Food for Infants on Gut Microbiota, Inflammation and Immunity
Dr. Minghua Tang – University of Colorado

Physiological Consequences of Blueberry Intake in Older Adults and How Blueberry Intake affects the Adaptive Immune System
Dr. Kenneth Mukamal – Beth Israel Deaconess Medical Center

To consumers around the world, blueberries are an **essential, delicious** and **incredibly versatile** part of a daily healthy lifestyle and diet and the important moments in our lives and always …

blueberries
Inspiring Possibilities™
U.S. Highbush Blueberry Council

Thank you.

Contact
Leslie Wada, PhD, RD
Sr. Director of Nutrition & Health Research
U.S. Highbush Blueberry Council
lwada@blueberry.org
81 Blue Ravine Road, Suite 110, Folsom, CA 95630

blueberries
U.S. Highbush Blueberry Council