Leveraging Bold Science:
FFAR's 2022 Impact Report

FOUNDATION FOR
FOOD & AGRICULTURE
RESEARCH

Bold Science for Big Challenges

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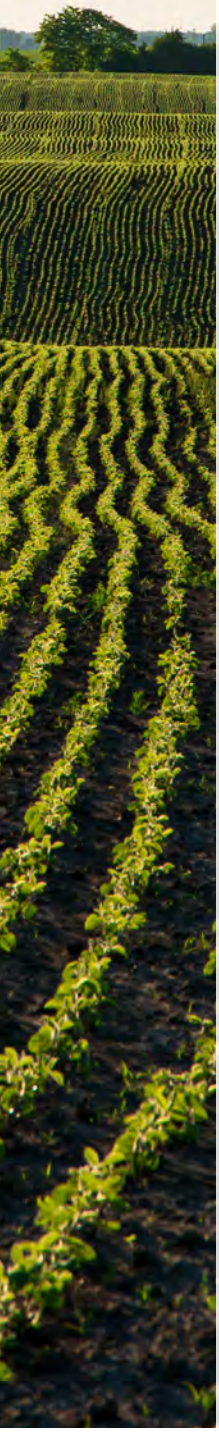

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What We Do

FFAR builds public-private partnerships to support bold science. Our research, co-created with the agriculture community, increases public agriculture research investments, fills critical research gaps and complements the U.S. Department of Agriculture's (USDA) research agenda.

We achieve our mission and work toward our vision in two ways:

Addressing Key Challenge Areas

We fund research focused on specific Challenge Areas: Soil Health, Sustainable Water Management, Advanced Animal Systems, Next Generation Crops, Health-Agriculture Nexus and Urban Food Systems. Additionally, we fund climate-smart research through our AgMission™ initiative.

Soil Health

Advanced Animal Systems

Sustainable Water Management

Health-Agriculture Nexus

Next Generation Crops

Urban Food Systems

AgMission™

Investing in Scientific Workforce Development

FFAR also offers various fellowship opportunities to equip the scientific workforce with expertise needed to address current and future food and agriculture challenges.

Our Mission

We build collaborative partnerships to support audacious science addressing today's food and agriculture challenges.

Our Vision

We envision a world in which pioneering, collaborative science provides every person access to affordable, nutritious food grown on thriving farms.

Year in Review

2022 marked our seventh year of grantmaking and our biggest yet. With matching funding from our partners, FFAR awarded 68 grants, which invested $128 million in audacious food and agriculture research. Of this $128 million, $46 million was FFAR funding and $82 million was matching funding from our partners.

2022 was also our most impactful year, marked by new leadership, direction, grants and programs that support individuals underrepresented in food and agriculture research.

Welcoming Dr. Chapotin

In August 2022, Dr. Saharah Moon Chapotin joined FFAR as executive director. Taking over for FFAR's Executive Director Emeritus Dr. Sally Rockey, Dr. Chapotin brings over 20 years of experience in plant sciences, international engagement and federal leadership and a passion for agriculture research. FFAR is thrilled to have Dr. Chapotin at the helm.

Expanding Our Board of Directors

2022 marked a year of expansion for FFAR's Board of Directors. With the help of the Board Search Committee, we welcomed David Donnan, Dr. Denise Heard, Dr. Venkata K. Kishore, Dr. Carolyn Lawrence-Dill and Dr. Donald Nkrumah to FFAR's Board of Directors.

Refreshing FFAR's Research Strategy

With new leadership in place, we laid the groundwork in 2022 to refresh our research strategy. FFAR engaged with a wide range of stakeholders to develop a comprehensive understanding of current and emerging food and agriculture research needs.

Launching the Tribal Agriculture Fellowship

In partnership with the Native American Agriculture Fund (NAAF), we launched the Tribal Agriculture Fellowship (TAF) program to advance education in agriculture, increase specialized knowledge and promote sustainability of agriculture in Tribal communities.

FFAR's Grants 2016 - 2022

Congress created FFAR in 2014 and we have been awarding grants since 2016.

307
GRANTS AWARDED

$1:$1.40
RATIO OF FFAR FUNDING TO MATCHING FUNDS

$605M
FFAR & MATCHING FUNDS AWARDED

550+
FUNDING PARTNERS

40%+
OF PROJECTS ARE CLIMATE-RELATED

2022 Grantmaking

$46M $46 million in Farm Bill funding invested in scientific research and workforce development

$82M $82 million in non-federal matching funds leveraged and awarded

2022 Scientific Workforce Development Programs

10
TRIBAL AGRICULTURE FELLOWS

6
KIRCHNER FOOD FELLOWS

28
FFAR FELLOWS

1
NAS PRIZE WINNER

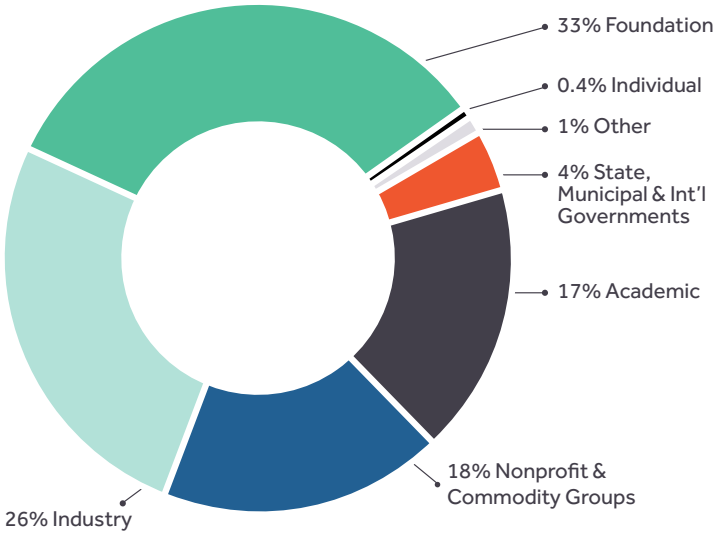
9
NEW INNOVATOR AWARDEES

13
FFAR VET FELLOWS

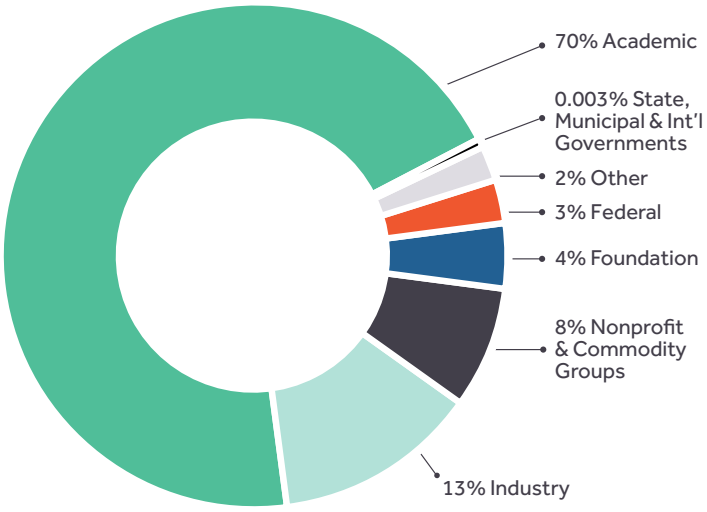
Diversifying our Stakeholder Base

In accordance with our governing legislation, FFAR matches every federal dollar with a dollar from a non-federal source through public-private partnerships. At present, we garner, on average, $1.40 from non-federal partners for every federal dollar invested in research. The graph below shows the breakdown of matching funds received from our funding partners by organization type from 2014 through 2022. The second graph highlights our grantees by institution type from inception through 2022.

Percent Matching Funds Received, by Donor Type
Inception through 2022



Percent of Total FFAR Grantees, by Institution Type
Inception through 2022



We are committed to diversifying our partner base and reducing the matching burden for academic institutions, especially minority-serving institutions, land-grant universities, smaller institutions and those with fewer private-sector relationships. Although academic institutions represent 70% of grantees from inception to date, as of 2022, they are the source of only 17% of total matching funds from inception to date.

FFAR has made several changes to support academic grantees in securing match, including:

- FFAR allows universities to count salaries as a "cash" match.
- FFAR expanded the costs which can be covered under "direct costs" to support academic applicants.
- FFAR has made it a priority to reduce the reliance on "applicant match"; for example, by securing matching funds from companies or foundations prior to releasing a solicitation. This year, a significant portion of FFAR programs have not required applicants to secure their own matching funds.

In response to surveys and feedback we received about our grantmaking process, FFAR is undertaking efforts to simplify the process for applicants, grantees and reviewers. These efforts include:

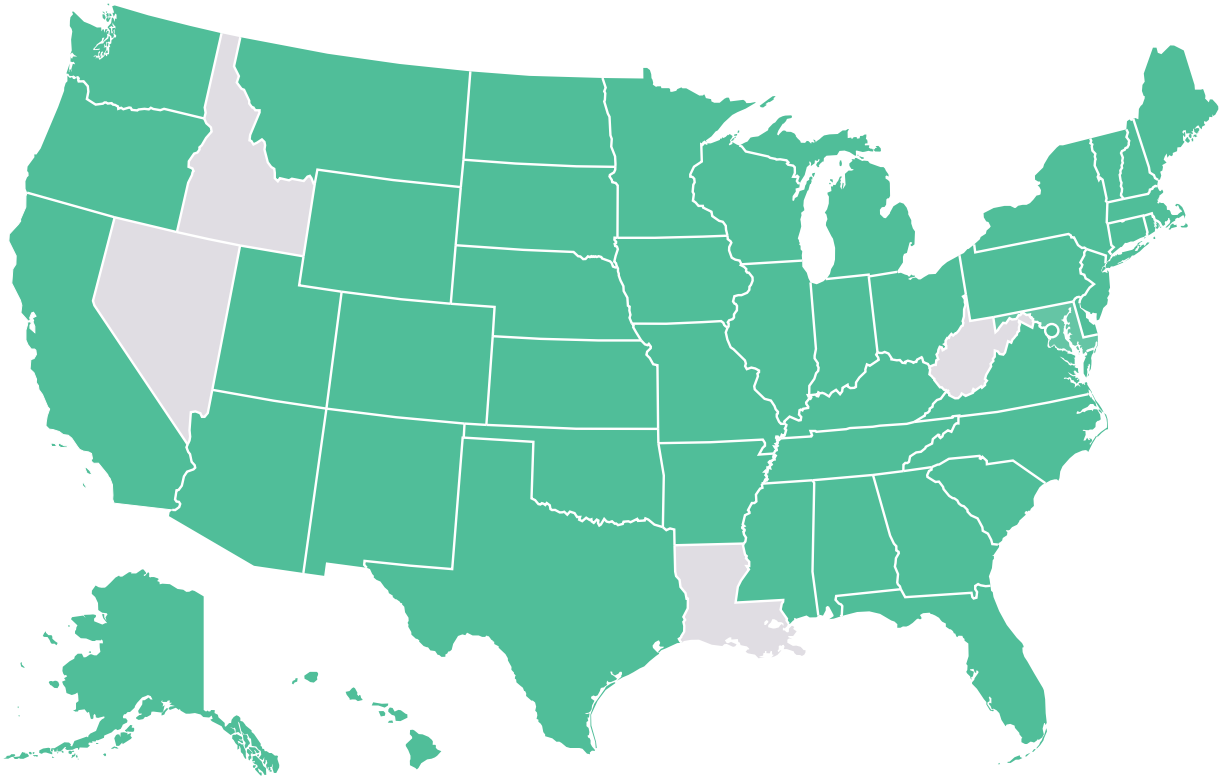
- Switching to a new grants management system;
- Updating the structure of our Grants & Funding webpages;
- Providing better templates and examples; and
- Revising reviewer materials to streamline the peer-review process.

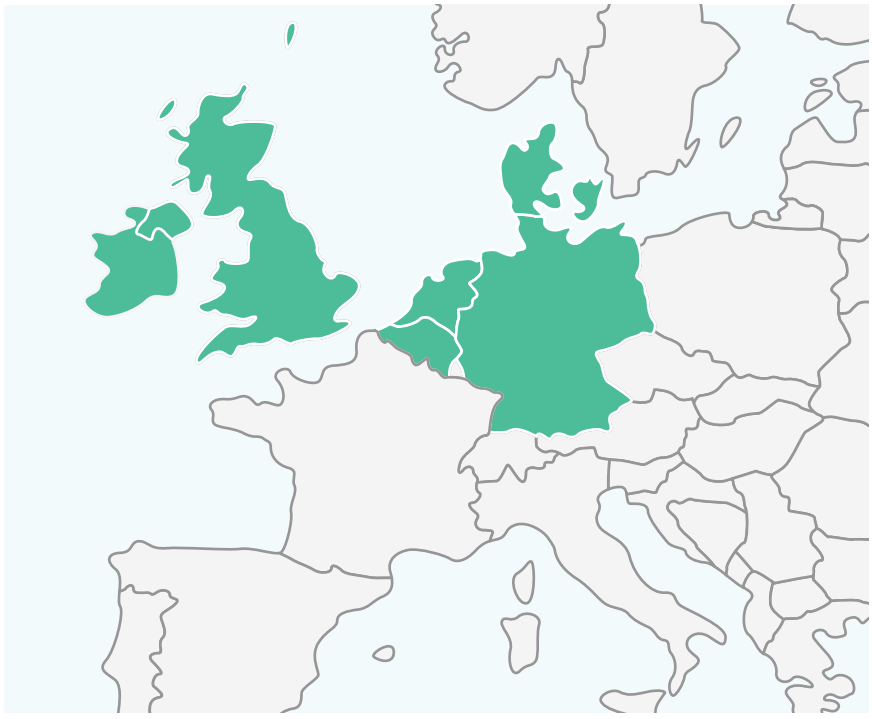
FFAR also strives to maintain transparency in all our work, including our grants, opportunities and finances:

- We produce an Annual Report that outlines our annual activities, upcoming opportunities and information about our operations and financial conditions.
- We post summaries of all awards made on our website.
- Our Stakeholder Notice includes a schedule of funding opportunities, information about the grant review process and how FFAR communicates funded awards.
- We hold a public meeting every fall. This meeting allows the public and members of the food and agriculture community to hear from FFAR's leadership and comment on FFAR's direction.
- FFAR regularly distributes press releases announcing grants awarded, results, events and upcoming funding opportunities. We distribute these releases via email and post them in the News section on FFAR's website. Those interested in receiving FFAR news can sign up for our Newsletter.

National & Global Reach

FFAR has made awards in 46 states and seven countries.





Initial Results & Impact

FFAR awarded 68 new grants in 2022 totaling $128 million. A full list of FFAR grants awarded in 2022 can be found on the FFAR website. Additionally, the FFAR website lists all grants awarded since 2014.

Food and agriculture research is critical to address challenges farmers currently face; however, this research takes time. Some public agriculture research can yield results in the first few years, though most agricultural research investments require a decade or longer to realize full benefits. These investments are worth the wait as the resulting research can secure the global and U.S. food supply, increase farmer profits, lower costs for consumers, address market challenges, improve animal health and wellbeing, deliver more nutritious crops, build resilience and provide significant environmental benefits. Investing in public agriculture research further offers significant returns on the investment. The USDA Economic Research Service found public agricultural research spending generated, on average, $20 in benefits to the U.S. economy for every dollar spent.

FFAR's first grants were awarded in 2016, and with delays caused by the pandemic, the full impact of our $605 million investment is still to be realized. In the meantime, FFAR awards are beginning to yield impacts and results. Below is an overview of selected grants that have provided tools, knowledge and new technologies that bring benefits to farmers, consumers and the environment.

Responding to Coffee Leaf Rust Disease

Plant and animal pests and pathogens can quickly devastate crops, livestock and livelihoods. When such unplanned events occur, it often takes months or even years to deploy an effective response. Researchers must understand emerging problems immediately, yet conventional funding opportunities take time and effort to pursue. FFAR's Rapid Outcomes from Agricultural Research (ROAR) grants fill urgent research gaps in response to emerging food and agriculture threats, providing initial information and time for the community to develop a comprehensive response strategy.

A recent ROAR grant addressing Coffee Leaf Rust Disease was critical to protecting Hawaii's coffee farmers and industry from a devasting disease, Coffee Leaf Rust (CLR), which was recently discovered in Hawaii for the first time. While CLR has decimated coffee production in Latin America since 2011, its spread to Hawaii has threatened the livelihoods of the almost 1,500 coffee farmers in Hawaii.

Rapid Response to Coffee Leaf Rust

PI/Grantee: Suzanne Shriner, Director of Synergistic Hawaii Agriculture Council
Year Awarded: 2021
Location: Hilo, Hawaii
Program: Rapid Outcomes from Agricultural Research
Matching Funders: The Hawaii Coffee Association, Hawaii Coffee Growers Association, The Maui Coffee Association, Purdue University, United Ka'u Farmers Cooperative, The Synergistic Hawaii Agriculture Council and the Hawaii Department of Agriculture

$150,000
FFAR Award Amount

$431,103
Total Award Amount

Research

ROAR-funded researchers quickly surveyed coffee farms across Hawaii, gathering information about the severity of the disease and what conditions are favorable to its spread. They developed a real-time diagnostic tool that farmers and others used to rapidly detect CLR on-farm. The team used genomic tools to identify the exact variant of CLR, a necessary first step in development of a targeted response that includes resistant coffee varieties. The team also tested different fungicides for efficacy and partnered with extension staff to optimize sanitation protocols and disseminate them to farmers, helping to reduce CLR's spread.

Impact

University of Hawaii extension workers and faculty shared the information and research results generated due to FFAR funding with farmers through 83 "farm doctor" visits and 66 industry and stakeholder events. This outreach provided Hawaii's coffee growers with the most up-to-date disease control measures.

USDA's National Institute of Food and Agriculture subsequently awarded the research team a Specialty Crop Research Initiative (SCRI) grant to continue this important work.

> "When the devastating coffee leaf rust fungus arrived in late 2020, Hawaii growers had no resources on the ground. FFAR was the first to provide funding for research, technical and extension support. Within weeks, their Rapid Outcomes for Agricultural Research grant was in place. The data collected created the framework for on-farm activities now. Coffee growers, farmworkers and downstream industries depending on Hawaii coffee have all benefited economically from this work."
>
> Suzanne Shriner, Director of Synergistic Hawaii Agriculture Council

Deploying Soil Health Management Tools

Currently, farmers are faced with an ever-expanding assortment of decision-making software; however, these tools often do not communicate with each other, making it difficult to transfer, share or use the data collected. They also require farmers to input their data into each tool individually. OpenTEAM is a farmer-driven collaborative committed to advancing soil health and reducing greenhouse gas (GHG) emissions via shared knowledge, collaborative frameworks and open-source, connected technologies to build climate change resilience and thriving communities. The connected technologies allow farmers to enter data once and access all available tools in the OpenTEAM collaborative.

OpenTEAM (Technology Ecosystem for Agricultural Management)

PI/Grantee: Dr. Dorn Cox, Wolfe's Neck Center
Year Awarded: 2021
Location: Freeport, Maine
Matching Funders: Applied GeoSolutions, Colorado State University, Cool Farm Alliance, Colorado University-Boulder, General Mills, Michigan State University, Our.Sci, Regen Network, Soil Health Partnership, Stonyfield Organic, The Stonyfield Foundation, University of British Columbia and Wolfe's Neck Center

$5,000,000
FFAR Award Amount

$10,000,000
Total Award Amount

Research

This project launched in 2019 with FFAR funding and is providing farmers with increased access to data that improves soil health and reduces GHG emissions. The project establishes shared frameworks for community-driven solutions that make data collection, sharing and analysis the most accessible for farmers and ranchers. In using this framework, the OpenTEAM community creates shared goals, increases access to agricultural knowledge and fosters farmer sovereignty in a traditionally competitive environment. This work is crucial in making regenerative agriculture a viable farming practice and creating effective conservation tools that help farms reduce their emissions and sequester more carbon. OpenTEAM enables farmers to make data-driven decisions and track their progress.

Impact

OpenTEAM created a collaborative community of farmers, scientists, researchers, engineers, farm service providers and food companies that is growing organically and continuously. Through OpenTEAM, 15 farm organizations and their extended farmer networks have gained access to field-level carbon measurement, digital management records, remote sensing, predictive analytics and input and economic management decision support. These connected technologies also support adaptive soil health management for farms of all scales, geographies and production systems. OpenTEAM further accelerates scientific understanding of soil health by providing more high-quality data to researchers collaborating on the project.

More recently, OpenTEAM, in collaboration with over 60 partner organizations, obtained multi-million-dollar funding from USDA to expand initiatives fostered by FFAR's initial $5 million investment. Through this expansion, the platform is projected to provide quantitative feedback on millions of acres of farmland by 2024.

OpenTEAM maintains a public website and deposits all its technical work in a Gitlab repository. OpenTEAM has also developed an innovative community building tool, the farmers' digital coffeeshop and common profile, which connects farmers to projects and opportunities.

Connecting Growers & Markets

Small fresh produce growers, more than 10% of whom are minority farmers, face several challenges that compromise profitability. Fresh produce is highly perishable, consumer demand varies and growers often harvest the same crops at the same time. Furthermore, extensive distribution chains create waste and lower profits. On average growers generally receive a small fraction of a dollar spent on produce by the consumer. Dr. J. Rene Villalobos aims to increase grower profits by 20-30%.

To address these challenges, Villalobos and his research team build tools that help fruit and vegetable growers diversify harvests, capitalize on market opportunities and ensure that farming remains an attractive career choice and provides a living wage. The research team ultimately developed a prototype platform, TERRa-Fresh, that provides farmers with coordination tools to predict and efficiently meet consumer demand. These tools further reduce food waste and increase farmer profits.

Integration of Small Farmers into Technology-enabled, Rapid-response Fresh Food Supply Chains

PI/Grantee: Dr. J. Rene Villalobos, Arizona State University
Year Awarded: 2019
Location: Tempe, AZ
Program: Seeding Solutions
Matching Funders: Arizona State University and New Mexico State University

$963,513
FFAR Award Amount

$1,928,166
Total Award Amount

Research

Through this grant, Villalobos and his team partnered with academic researchers, small businesses and grassroots organizations in Arizona and New Mexico. This unique partnership established a platform for efficient, rapid-response supply chains that enable small growers to service a significantly higher portion of the market for fresh produce. The platform identifies market opportunities and helps growers diversify crops by providing specific planting schedules to capture different markets.

- The platform's market intelligence and planning tools help small farmers reach markets at the right time with the right product, reducing food waste;
- Automated logistics coordination and negotiation tools allow small farmers to operate efficiently; and
- This research is delivering a roadmap to help small farmers participate in direct-to-consumer produce channels such as Amazon Fresh, Instacart or Walmart Grocery.

> "We wouldn't have fully understood the first-mile challenges without the FFAR grant. FFAR's partnership model allowed us to form a multidisciplinary team that led us into new, uncharted research, resulting in the idea of the Mini-Containers. Our initial success from the FFAR grant further resulted in additional research funding, which allows us to continue supporting fresh produce growers."
>
> **Dr. J. Rene Villalobos, Entrepreneur Advancing TERRa-Fresh & Mini-Containers, Retired Arizona State University Faculty**

Impact

Villalobos and the research team shared the results in several ways to engage numerous stakeholders. This outreach included hosting community-wide training workshops, engaging with social and print media and publishing several peer-reviewed articles.

In conducting this research, Villalobos uncovered other logistical challenges that produce growers face in getting their products to markets. Specifically, produce growers face first-mile problems, meaning they struggle to secure refrigerated transport for their harvests. Often their harvests are small and securing a commercial refrigerated truck for a smaller harvest is prohibitively expensive. Growers are also concerned about potential contamination if multiple harvests are combined in a single truck and some growers live in rural areas that commercial trucks do not service.

Building on their FFAR-funded research, Villalobos developed a concept for aggregating multiple harvests in separate refrigerated cubes, called Mini-Containers. The integrated storage-transportation system aggregates Mini-Containers, which are stackable, insulated containers, powered by traditional as well as solar-based sources, that create controlled environments to extend the shelf-life of perishable products. The Mini-Containers can be delivered before or during harvests and refrigerate the produce until a truck that collects multiple containers can transport them to the intended market. Due to Villalobos' outcomes from the FFAR-funded research, the City of Phoenix provided Villalobos $95,000 to build a Mini-Container protype. The research team then received a $250,000 National Science Foundation grant to improve the central refrigeration unit used to efficiently maintain the Mini-Containers at the right temperature.

Fresh Cubes can refrigerate produce without a power source for about six hours. The research team invented a portable solar farm, which they are currently patenting, to power refrigerators post-harvest in rural areas for longer.

Villalobos noted that there is considerable interest in continuing and expanding the research.

Assessing Adaptive Multi-Paddock Grazing's Benefits

Adaptive Multi-Paddock (AMP) grazing is a livestock management practice that uses lightweight, portable fencing systems to move animals strategically around a large pasture, unlike conventional grazing practices in which animals continuously graze in one location. Smaller studies of AMP grazing have indicated that this practice could increase farm resiliency, contribute to carbon sequestration, improve soil biodiversity and impact animal wellbeing and productivity. However, scientists and ranchers needed additional research to demonstrate whether AMP grazing can achieve these goals more effectively than continuous grazing practices.

Adaptive Multi-Paddock (AMP) Grazing Research Proposal
PI/Grantee: Peter Byck, Professor of Practice, Arizona State University
Year Awarded: 2017
Location: Tempe, AZ
Matching Funder: McDonald's USA

$1,250,000
FFAR Award Amount

$2,500,000
Total Award Amount

Research

FFAR and McDonald's USA funded additional research, led by Peter Byck, professor of practice, School of Sustainability and School of Journalism at Arizona State University. Byck and his research team recruited five pairs of neighboring ranchers in the Southeastern U.S. to participate in this long-term study where one farmer from each pair implemented AMP grazing and the other used continuous grazing practices. The researchers then compared the results, neighbor to neighbor.

Impact

This research quantified AMP grazing's significant impact on farm and ranch productivity, as well as measurable environmental benefits.

The research produced clear data showing that AMP grazing increases carbon sequestration and soil carbon and nitrogen stocks and improves soil microbial and fungal life. In fact, the soil on the farms using AMP grazing stored 13% more carbon and 9% more nitrogen than the conventionally grazed farms. The farms using AMP grazing also absorbed more water, which can address water shortages and reduce the magnitude of flooding. AMP also benefits animals' wellbeing; animals were calmer, with slightly better coats and body condition. Finally, AMP grazing can help restore declining populations of grassland birds.

AMP grazing further benefited ranchers. The healthier soil on AMP-grazed farms can save farmers thousands of dollars annually as these soils do not require additional nitrogen or fertilizer application. Several of the farmers involved in the study have since adopted or have plans to adopt AMP grazing on their land.

The results have been published in several research papers. Additionally, this research provided data sets that allow AMP grazing to be represented in GHG emission modeling, helping to create agriculture strategies to address climate change. To further communicate the scientific findings, Byck is directing a four-part documentary, Roots So Deep (you can see the devil down there), detailing the experiences of farmers practicing both methods of grazing and the scientists working on their farms.

Breeding Cattle for Heat Tolerance

Temperatures globally are rising, and more than half of the global cattle population are raised in sub-tropical or tropical environments where high temperatures are common. When subject to high temperatures, cattle often undergo stress causing them to exhibit extreme physical reactions. Heat stress reduces feed intake, impedes growth and increases disease susceptibility; ultimately, heat stress decreases milk and meat production per amount of GHG emitted.

Precision Bred Adaptation of Elite Taurine Breeds of Beef & Dairy Cattle

PI/Grantee: Dr. Tad Sonstegard, Acceligen
Year Awarded: 2020
Location: Gainesville, FL
Program: Seeding Solutions
Matching Funders: Acceligen and The Semex Alliance

$748,545
FFAR Award Amount

$1,497,641
Total Award Amount

Research

To address this problem, Dr. Tad Sonstegard designed genetic modifications to render cattle more resistant to heat. These modifications were based on Acceligen's previous research of the prolactin receptor gene of cattle breeds adapted to the heat of the Caribbean Basin. Using new breeding technologies based on gene editing, Sonstegard and his team introduced a genetic modification in prolactin receptors, that lead to a condition known as SLICK, which protects these animals from heat stress. Cows with a SLICK mutation also have lower normal body temperatures than cattle without it and shorter hair that allows their bodies to respond more efficiently as temperatures rise.

Sonstegard led a collaboration to protect elite performance animals from heat stress using new breeding technologies that introduced the SLICK mutation. Acceligen conducted the gene editing work with experts at the University of Florida and Semex, a private corporation specializing in animal breeding and genetic products sales.

Sonstegard's team validated that introducing SLICK mutations into a non-adapted, performance-based genome can protect cattle from heat stress. The research team has successfully introduced the SLICK mutation into 10 purebred Angus and Jersey cattle.

Impact

This research provides opportunities to control heat stress, making breeds of elite performance genetics more productive in areas experiencing warmer temperatures. The SLICK mutation, which reduces animal stress caused by lack of heat tolerance, can improve animal health, wellbeing and fertility. More productive herds could further meet the growing demands for beef and dairy in geographies where sustainable production of local animal protein has been challenging.

The SLICK animals produced in this project by Acceligen are under regulatory review in multiple countries, which will allow the semen to be commercialized in the U.S. and abroad in economies with tropical production zones.

In addition to delivering precision-bred adapted cattle, the researchers generated three large sets of RNA sequencing data, which are freely available through the Gene Expression Omnibus of the National Center for Biotechnology Information.

> "The advancements in breeding methods uncovered by this research have the most potential of all available technologies to reduce emissions relative to protein output, while supporting producers in the tropics and other regions experiencing heat that debilitates animal productivity."
>
> Dr. Tad Sonstegard, Chief Executive Officer at Acceligen

Photo Credit: Micah Schouten, Trans Ova Genetics

Preventing Keel Bone Fractures in Poultry

Improving animal welfare remains an important societal and economic priority. For poultry, keel, or breastbone, fractures are a prevalent concern when raising hens in cage-free housing systems. This issue is particularly significant as the demand for eggs is increasing, and numerous large-scale producers, including all top 25 U.S. grocers, have pledged to transition their egg supply to cage-free housing according to consumer demand. FFAR is supporting research to reduce keel bone fractures in egg-laying hens, particularly those in cage-free housing.

A Practical Phenotypic Solution to Reduce Keel & Skeletal Bone Damage in Laying Hens

PI/Grantee: Dr. Ian Dunn, University of Edinburgh's Roslin Institute

Year Awarded: 2017

Location: Edinburgh, UK

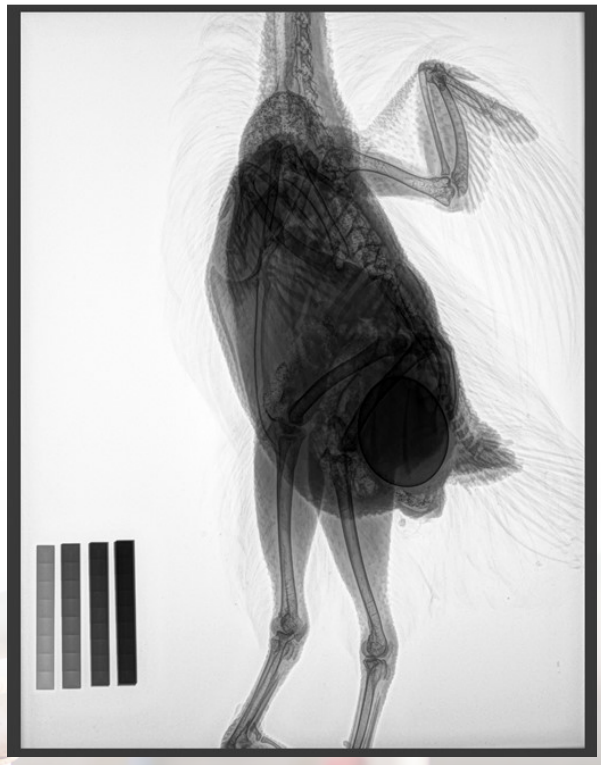
Matching Funders: Open Philanthropy Project

$243,296
FFAR Award Amount

$486,594
Total Award Amount

Research

Breeding hens with stronger bones can reduce the incidence of keel bone fractures. To explore this approach, Professor Ian Dunn and his collaborators at the Roslin Institute of the University of Edinburgh developed a quick X-ray measurement system for on-farm use. The X-ray system measures a hens' lower leg, which the researchers have established is correlated with the density observed in the keel bone and is also easier to make a quantitative measurement from an X-ray. Most importantly, this measurement is possible while the hen is alive.



Impact

Dunn and his team with researchers at a poultry breeding company applied this novel X-ray approach in a farm setting on live pedigree hens, which are at the top of the breeding pyramid. This research offers a reliable and quick method to estimate keel bone density. The results are extremely encouraging, equaling or surpassing the genetic parameters previously obtained using hen bones post-mortem. Using this information, producers can more efficiently select breeds with stronger bones.

Assessing Scientific Impact

The economic, environmental and social impact of food and agriculture research can take years to decades to reach producers and consumers. Scientific impact quantifies the influence of FFAR's research on the scientific community and can often be measured within the first few years of a grant and beyond. Measuring scientific impact helps FFAR assess the reach of our grants and their influence on other researchers.

In 2022, FFAR analyzed the scientific impact of our grants from 2017 to 2022. This analysis included academic publications and citations of FFAR-funded research as well as a survey of FFAR's grantees. These findings indicate that FFAR provides significant value to the scientific community.

Seed Funding for Researchers

A FFAR grant helps researchers establish themselves, especially those early in their careers or conducting high-risk research. Receiving a FFAR grant can lead to private investment that further advances a technology or solution. FFAR funding often serves as "seed funding" that encourages additional investments in food and agriculture research. In a survey of FFAR grantees, 92% secured additional funding from a variety of sources during and after receiving FFAR funding, and 42% reported obtaining $1 million or more in funding after receiving a FFAR award.

Connecting the Scientific Community

Collaboration enables ideas and expertise to be shared more easily and can facilitate greater access to data, facilities and equipment. Over 70% of FFAR-funded publications between 2017 and 2022 involved U.S. co-authors, while 30% of the total publications involved both U.S. and international authors. Publications involving international collaboration had particularly high citation rates.

Creating Jobs

FFAR's research investments create and maintain jobs. Upon completion, FFAR's New Innovator in Food & Agriculture Research Awards, for instance, created more than 170 new jobs and maintained more than 400 jobs across the United States.

Generating Relevant, Impactful Research

Across all FFAR Challenge Areas, our research produced more than 350 academic publications between 2017 and 2022. FFAR-funded publications are highly impactful, with publications authored by FFAR-funded grantees receiving on average 11 citations each, a rate 200% higher than the global average.


FFAR
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