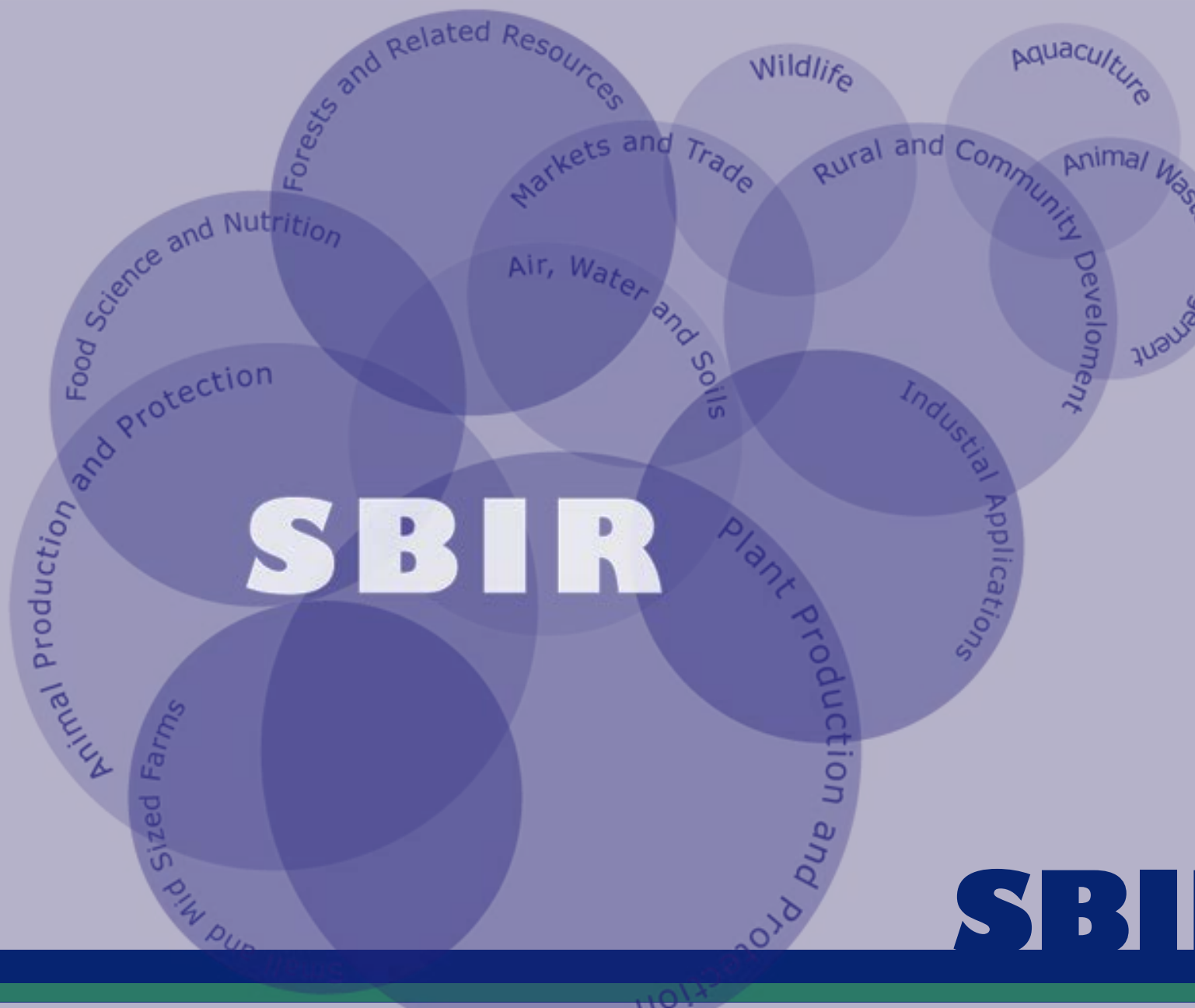


US EPA ARCHIVE DOCUMENT

The logo features the acronym 'SBIR' in a bold, white, sans-serif font, centered within a cluster of approximately 12 overlapping circles. These circles are rendered in various shades of blue and purple, creating a sense of depth and interconnectedness. Each circle contains text representing a different domain of research or industry, such as 'Food Science and Nutrition', 'Forests and Related Resources', 'Wildlife', 'Aquaculture', 'Animal Waste Management', 'Rural and Community Development', 'Animal Production and Protection', 'Industrial Applications', 'Plant Production and Protection', 'Air, Water and Soils', 'Markets and Trade', and 'Food Science and Nutrition'. The circles overlap in a way that suggests a complex, multi-faceted research environment.

SBIR

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A decorative horizontal bar at the bottom of the page, consisting of a thick dark blue line and a thinner green line below it.

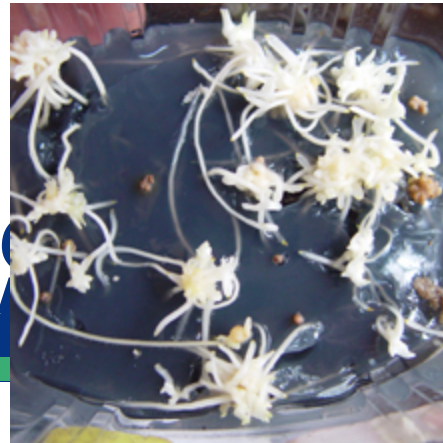


SBIIR



National
Institute
of Food
And
Agriculture

**To Advance Knowledge
For Agriculture, the
Environment, Human
Health and Well-being,
and Communities**



Features of USDA SBIR Program

- Award Grants Only - Ideas are Investigator-Initiated
- Awards Based on Scientific and Technical Merit, PI and Company Qualifications, and Commercial Potential
- Proposals Reviewed by Confidential Peer Review Using Outside Experts From Non-profit Organizations
- Funds Allocated to Topic Areas in Proportion to Number of Proposals Received
- Subcontracting to Universities and USDA Labs Permitted and Encouraged

SBIR



Features of USDA SBIR Program [2 OF 2]

- Phase I Grants = 8 Months/\$100,000
- Phase II Grants = 2 Years/\$500,000
- 12 Month No-cost Extension Available

SBIR



USDA SBIR Topic Areas

Forests & Related Resources

Address the health, diversity and productivity of the Nation's forests and grasslands through the development of environmentally sound approaches to increase productivity of forest lands, improve sustainability of forest resources, and develop value-added materials derived from woody resources.

Plant Production and Protection – Biology

Enhancing crop production by applying biological approaches to, reduce the impact of harmful agents, develop new methods for plant improvement, and apply traditional plant breeding methods and new technologies to develop new food and non-food crop plants.

Animal Production and Protection

Develops innovative, marketable technologies that will provide significant benefit to the production and protection of agricultural animals.

Air, Water and Soils

Develops technologies for conserving and protecting air, water and soil resources while sustaining optimal farm and forest productivity.

Food Science and Nutrition

Research focusing on developing new and improved processes, technologies, or services that address emerging food safety, food processing and nutrition issues.

The logo for the USDA Small Business Innovation Research (SBIR) program. It features the letters "SBIR" in a large, bold, blue sans-serif font. The letters are positioned on a white background that is part of a larger blue rectangular area at the bottom of the slide. Below the blue area is a thin green horizontal line.

USDA SBIR Topic Areas [2 OF 2]

Aquaculture

Develops new technologies that will enhance the knowledge and technology base necessary for the expansion of the domestic aquaculture industry as a form of production agriculture.

Biofuels and Biobased Products

Promotes the use of biofuels and non-food biobased products by developing new or improved technologies that will lead to increased production of industrial products from agricultural materials.

Rural and Community Development

Applications may be submitted for the development of new technology, or for the utilization of existing technology, that address important economic and social development issues or problems in rural America.

Plant Production and Protection – Engineering

Enhance crop production by creating and commercializing technologies that enhance system efficiency and profitability and that protect crops from pests and pathogens in economically and environmentally sound ways.

Small and Mid-Size Farms

The Small and Mid-Size Farms topic area aims to promote and improve the sustainability and profitability of small and mid-size farms and ranches (where annual sales of agricultural products are less than \$250,000 for small farms and \$500,000 for mid-size farms - hereafter referred to as small farms).

The logo for the USDA Small Business Innovation Research (SBIR) program. It features the letters "SBIR" in a large, bold, blue serif font. Below the letters is a thick horizontal bar, with the top portion being dark blue and the bottom portion being green.

U.S. Department of Agriculture

Small Business Innovation Research Program

Dr. William Goldner

Biofuels and Biobased Products

Dr. Charles Cleland

Forests and Related Resources

Dr. Jodi Williams

Food Science and Nutrition

Dr. Gene Kim

Aquaculture

Dr. Shing Kwok

Plant Production and Protection –
Biology

Dr. Brent Elrod

Rural and Community Development

Dr. Denis Ebodaghe

Small and Mid-Size Farms

Dr. Robert Smith

Animal Production and Protection

Scott Dockum

Program Coordinator, SBIR

Dr. Charles Cleland

Air, Water and Soils

Elden Hawkes

Program Specialist, SBIR

Dr. Kitty Cardwell

Plant Production and Protection -
Engineering

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Technology Areas Supported by the USDA/SBIR Program

- Information Technology
- Robotics
- Electronics
- Biotechnology
- Nanotechnology
- Microelectro
Mechanical Systems
(MEMS)
- Acoustics
- Remote Sensing
- Genetic Engineering
- Material/Coatings
- Food Safety
- Biofuels
- Machine Vision
- Precision Agriculture
- Engineering
- Physics
- Chemistry

SBIR

USDA SBIR REVIEW PROCESS

- Proposals are evaluated by confidential peer review
 - Phase I: Panels plus ad-hoc reviewers
 - Phase II: Panels and ad-hoc reviewers
- Selection criteria include
 - Scientific/technical merit
 - Commercial potential
 - For Phase II: degree to which Phase I feasibility has been demonstrated

SBIR



USDA SBIR REVIEW PROCESS

[2 OF 2]

- All Applicants Receive Verbatim Copies of Reviews
- Phase I applicants that were not selected for funding are able to reapply for Phase I funding during the next solicitation cycle.
- Phase II applicants are only able to apply one time.

SBIR



University and Government Scientist Involvement in USDA SBIR Program

- Strongly encouraged
- Scientists may serve as consultants or receive a subcontract (limited to no more than 1/3 of Phase I award or 1/2 of Phase II award) and continue to work full time at their home institution
- Scientists may serve as the principal investigator on an SBIR grant, by reducing employment at their home institution to 49% for the duration of the grant and if the SBIR research is performed someplace other than their research lab
- It is usually not acceptable for university or government scientists to serve as consultants and have all the research done in their lab

SBIR



Advice for Phase I

- Provide a **VISION** of where you want to be at the end of Phase II
- Focus the Phase I research on critical enabling factor(s)
- Sell the importance of your project
- Provide a detailed experimental plan
- Provide insight into commercial potential
- Show connectivity with the communities you are intending to serve

SBIR



Factors that Improve Chances for Commercial Success

- High Scientific/Technical Merit
- Good Consultants, CRADA
- Business Expertise
- Phase III Partners
- Marketing Plan
- Participate in the Phase I and Phase II Commercialization Assistance Programs

SBIR



USDA SBIR Assistance Opportunity's

- Offer Commercialization Assistance Programs at both Phase I and Phase II for SBIR Grantees.
- USDA SBIR staff works directly with the USDA Office of Technology Transfer (OTT) to transfer USDA developed technologies to the market place using small businesses.
 - The Agriculture Research Service (ARS) technology transfer program is delegated the authority to administer the patent and licensing program for all intramural research conducted by USDA.
 - Small Business's can work with SBIR and OTT staff to license a USDA based technology for the marketplace.

<http://www.ars.usda.gov/business/business.htm>

SBIR

Solicitation/Proposal Schedule:

Phase I

- FY 2016 Solicitation: Released June 2015
- Phase I Proposal Deadline: Planned October 1, 2015
- Panels will Meet in January & February of 2016
- Award Decisions will be Made in Early March 2016
- Phase I Grant Period will be from June 1, 2016 to January 31, 2017

Phase II

- FY 2016 Solicitation will be released in late November of 2015 (only prior USDA Phase I winners are eligible)
- Phase II Proposal Deadline Date will be February 2016
- Phase II Grant Period will be from September 1, 2016 to August 31, 2018

The logo for the Small Business Innovation Research (SBIR) program, featuring the letters "SBIR" in a bold, blue, sans-serif font. The logo is positioned in the bottom right corner of the slide, above a decorative horizontal bar that is blue on top and green on the bottom.

Application Submission

- Application Submission Requires Many Steps to Complete the Process
- Download the USDA SBIR Solicitation at <http://www.nifa.usda.gov/funding/sbir/sbir.html>
- Electronic Submission is Mandatory via Grants.gov
- Obtain Data Universal Number System (DUNS) Number
- Register with System for Award Management (SAM) (replaces Central Contractor Registry (CCR))
- Register your Business with Grants.gov
 - http://www.grants.gov/applicants/get_registered.jsp
- Register your company with the Small Business Administration (SBA)
 - <https://www.sbir.gov/registration>

The logo for the Small Business Innovation Research (SBIR) program, featuring the letters "SBIR" in a bold, blue, sans-serif font. The logo is positioned in the bottom right corner of the slide, above a decorative horizontal bar that is blue on top and green on the bottom.

History of USDA SBIR Funding

Year	Budget _{MM}	Phase I	Phase II
2004	18.18	99/582	38/65
2005	19.20	93/557	40/79
2006	19.17	97/650	32/61
2007	18.20	81/510	39/71
2008	18.30	77/454	38/69
2009	19.71	73/350	33/53
2010	22.26	91/537	39/62
2011	19.20	56/508	37/72
2012	19.30	63/451	25/50
2013	18.41	59/518	28/52
2014	21.61	74/479	24/47

The logo consists of the letters "SBIR" in a bold, blue, sans-serif font. The letters are slightly shadowed, giving them a three-dimensional appearance as if they are floating above a dark blue horizontal bar that spans the width of the slide.

SBIR

Geographical Distribution Of USDA SBIR Winners FY83- FY14

CA		W		NE		NC		S	
CA	389	WA	146	MA	157	MI	118	TX	112
		CO	144	NY	119	WI	97	VA	91
		OR	99	PA	95	OH	83	NC	85
		HI	104	MD	76	MN	63	FL	69
		ID	62	ME	54	KS	68	GA	42
		MT	52	NJ	60	IN	63	LA	33
		AZ	47	CT	49	IA	76	AR	41
		WY	49	VT	24	IL	43	TN	34
		NM	39	DE	29	MO	46	OK	33
		UT	26	NH	17	ND	31	MS	19
		AK	16	DC	7	NE	27	SC	20
		NV	11	RI	7	SD	33	AL	20
				WV	6			KY	23
								VI	1
								PR	2
389		795		700		748		625	
13.5%		32.2%		27.3%		29.8%		23.7%	

SBIR

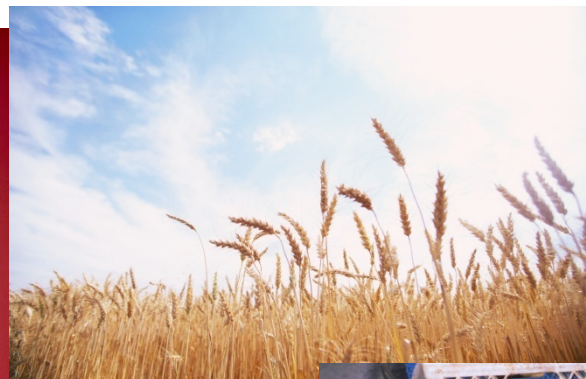
Other Funding Opportunities

- AFRI Challenge Areas:
 - ✓ Water for Agriculture
 - ✓ Climate Variability
 - ✓ Bioenergy
- AFRI Foundation
 - ✓ Bioenergy, Natural Resources and Environment (BNRE)

SBIR



USDA SBIR Success Stories



SBIR

Nitrate Elimination Company, Inc.

Technology Developed

- Developed nitrate test kits that allow farm managers to determine nitrate accumulation levels on the farm.
- This test kit will help agricultural producers manage nitrate concentrations, reduce costly nitrogen fertilizer applications, and protect the environment from pollution.

Commercialization Success

- In the final stages to receive EPA certification as a standard method for all nitrate testing under the Clean Water Act.
- Nitrate test kits are used as the standard method within all US Geological Survey (USGS) soil laboratories.

SBIR History

- Phase I – 2006 (\$80K)
- Phase II – 2007 (\$364K)
- 8.4 Air, Water and Soils



SBIR

Micronic Technologies

Technology Developed

- “MicroDesal,” technology
- Treats well water with unsafe nitrate levels
- Improves well water to meet U.S. Environmental Protection Agency clean drinking water safety standards.

SBIR History

- Phase I – 2013
- Phase II – 2014
- Phase I Funding - \$150K
- Phase II Funding - \$400K

Commercialization Success

- Company received a \$650K contract from the Navy for engineering flow design and field pilots of technology.
- State of Virginia provided a \$2M grant to Micronic which includes a quarter of the funds going to environmental analysis at University of Virginia, Wise campus.



SBIR

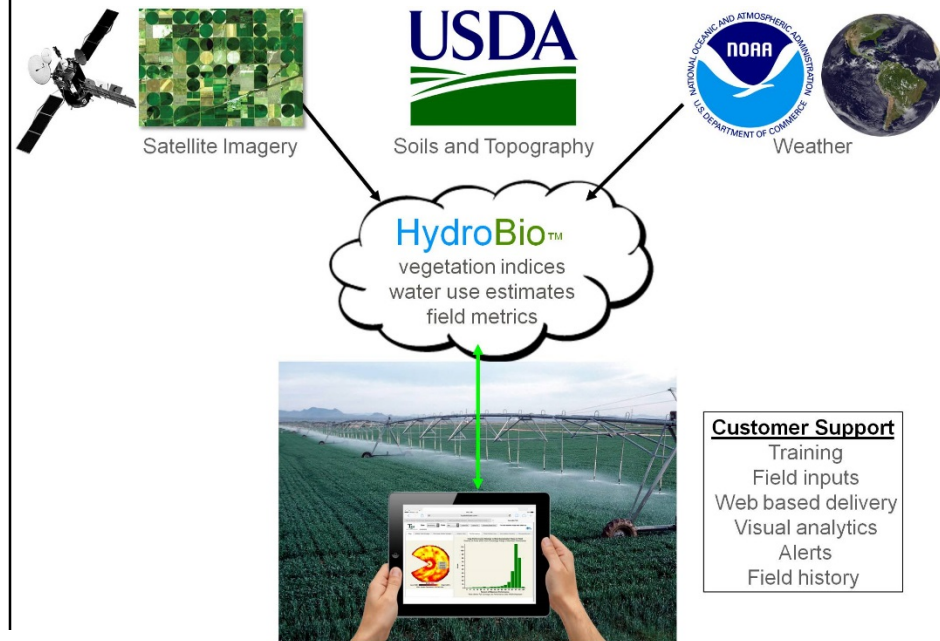
HydroBio, Inc

Technology Developed

- HydroBio, Inc. developed an innovative software product, Targeted Irrigation Management (TIM) to provide farmers with an easy-to-use irrigation decision support system that is being applied initially for center pivot irrigation systems.
- The software uses weather data and Earth observation satellite (EOS) data analyzed through proprietary methods to estimate the precise water needs of each field.
- Coupled with online pivot monitoring and control units TIM automated software enables the grower to deliver an optimal irrigation strategy to his field from his computer, tablet, or smart-phone

SBIR History

- Phase I – 2013
- Phase II – 2014
- Phase I Funding - \$99,956K
- Phase II Funding - \$450K



Aquaculture Systems Technologies, LLC

Technology Developed

- Developing a direct filtration process to allow both freshwater and marine Recirculating Aquaculture Systems (RAS) (including zoos and aquaria) to recover and extend the use of water in their facilities.
- Expected results are:
 - A significant cost savings through the reduction of the volume of waste water being discharged
 - Reduction of costs for make-up water, especially on marine systems which rely on expensive artificial sea salt mixtures or transport of saltwater from offshore sites.

SBIR History

- Phase I – 2011
- Phase II – 2013
- Phase I Funding - \$76,978K
- Phase II Funding - \$373K



SBIR

Success Story: Aquaculture Systems Technologies, LLC; Improved Biofilters for Recirculating Aquaculture Systems

This company has received several awards that have resulted in the development of a new Bead Filter technology for use in recirculating aquaculture facilities for solids removal and biofiltration.



SBIIR

Plant Production & Protection – Engineering (8.13)

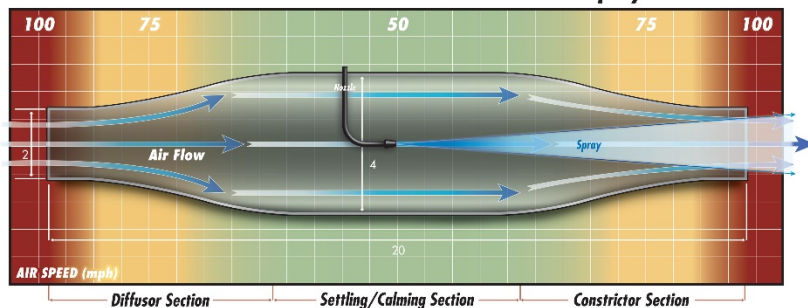
ARENA Pesticide Management Davis, CA

Reverse Venturi
Atomization Chamber

Potential Impact:

Dramatically reduce
pesticide spray drift from
aerial applications

Illustration: **Reverse Venturi Atomization Chamber with Spray Nozzle**



SBLR

AgraQuest, Inc.

Technology Developed

- Fungicide called Serenade®
- Non toxic to animals and to beneficial organisms.
- Serenade® is approved for use in organic production.
- Use of Serenade® helps manage development of resistance to synthetic fungicides.

Commercialization Success

- Serenade® has been sold in more than 23 countries
- Sales of Serenade® have exceeded \$23 million
- Bayer AG's CropScience acquired AgraQuest Inc. for close to \$500 million in July of 2012

SBIR History

- Phase I – 1997 (\$65K)
- Phase II – 1998 (\$250K)
- Company has had other Phase I and II projects with USDA SBIR
- 8.2 Plant Production and Protection - Biology



SBIR

Altaeros Energies

Technology Developed

- Altaeros Buoyant Airborne Turbine (BAT) leverages proven aerospace technology to lift a wind turbine into the strong, consistent winds beyond the reach of traditional towers.

Commercialization Success

- First commercial products to be sold in 2015.
- Technology was featured in CNN's 2014 edition of THE CNN 10: Inventions and in the New York Times.
- Telecoms group SoftBank has invested \$7m in Altaeros Energies for future deployment of the BAT technology in Japan.

SBIR History

- Phase I – 2011 (\$150K)
- Phase II – 2012 (\$140K)
- 8.6 Rural Development



SBIR

Whole Trees, LLC

Technology Developed

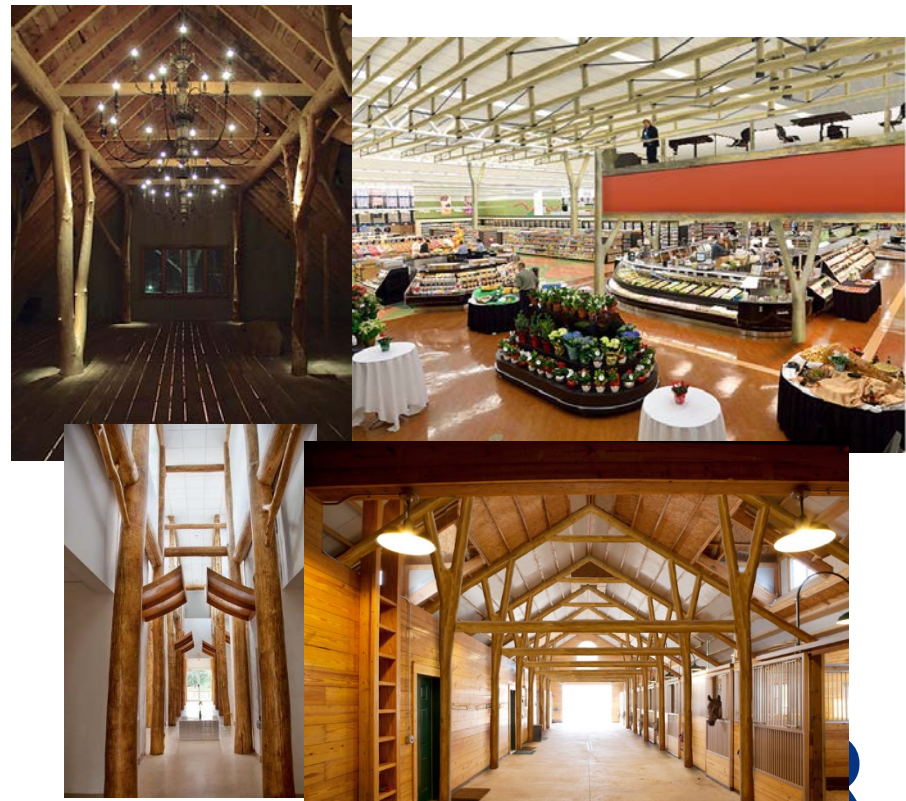
- Structural Testing of Branched Timber and Truss Assemblies
- Round timber can substitute for steel and concrete in medium and large scale construction under Type IV: "Heavy Timber Framing."

Commercialization Success

- The company will provide the ceiling joists of the 57,000-square-foot Festival Foods grocery store which will include ash trees being removed from the city of Madison due to emerald ash borer infestation.
- Raised \$1.6M in private equity funding since the initial SBIR grant.

SBIR History

- Phase I – 2011 (\$99K)
- Phase II – 2012 (\$362K)
- 8.1 Forests and Related Resources



USDA SBIR HOMEPAGE

www.nifa.usda.gov/fo/sbir

- **Program Information**
- **Solicitation (Request for Applications)**
- **Technical Abstracts**
- **Link to SBA and Other SBIR Programs**
- **Upcoming SBIR Conferences**
- **Find the Expert (CRIS & ARS)**
- **PowerPoint Presentation**
- **Success Stories**
- **Impact Newsletter**

SBIR



U.S. Department of Agriculture Small Business Innovation Research Program

Ali Mohamed, Director

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Web Site: www.nifa.usda.gov/fo/sbir

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ANY QUESTIONS?



SBIR