NIFA Funding Opportunities

Parag R Chitnis

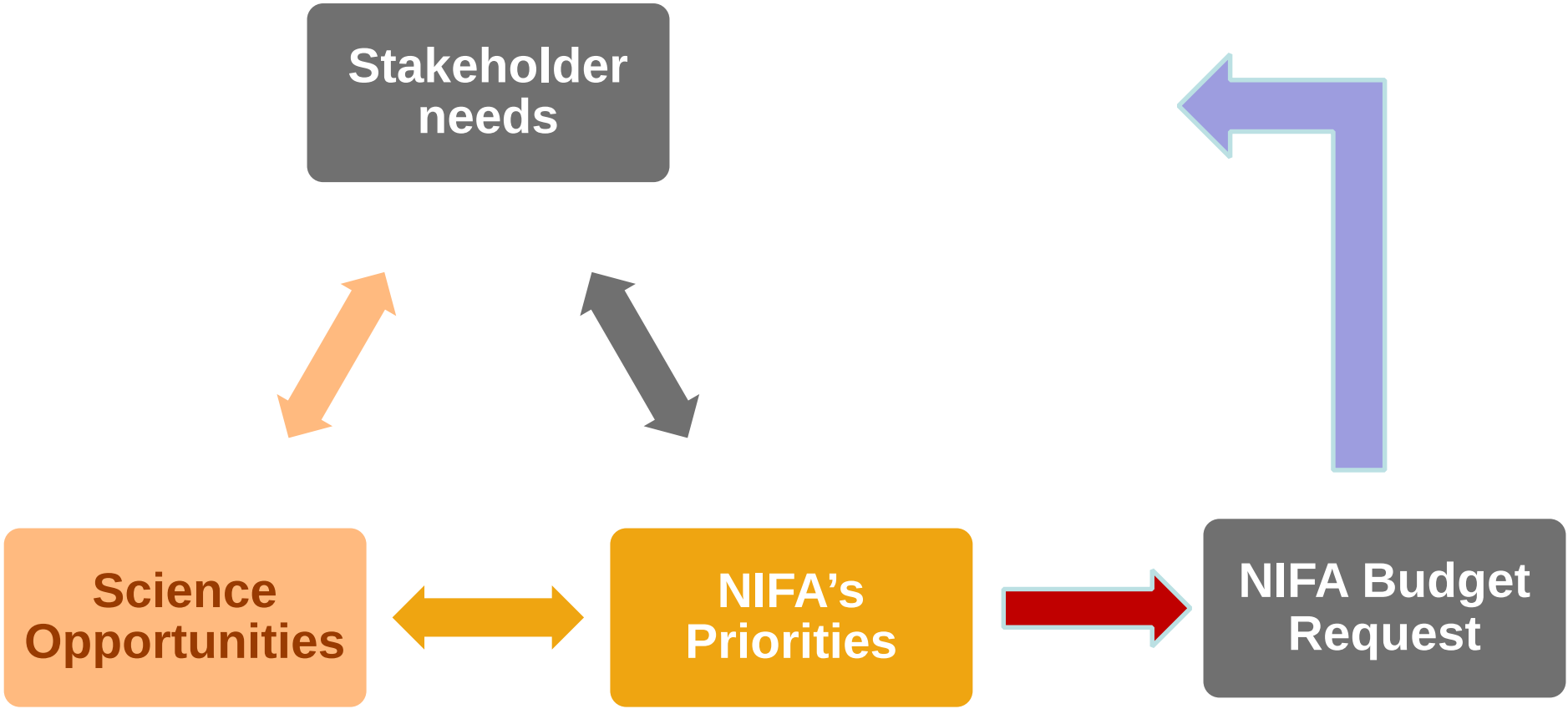
Deputy Director

National Institute of Food and Agriculture

NIFA

User-inspired Science, Transforming Lives

User-inspired Science, Transforming Lives



NIFA listens

Investing in Science to Transform Lives

Stakeholder Needs
Science Opportunities

https://nifa.usda.gov/nifalistens

Thursday, Oct. 19, Kansas City, Missouri
Thursday, Oct. 26, Atlanta, Georgia
Thursday, Nov. 2, Sacramento, California
Wednesday, Nov. 8, Washington Metro area

December 1, 2017

NIFA Organization- Programs

Institute of Food Production and Sustainability

Parag Chitnis

Division of Plant Systems- Production

Jeff Steiner

Division of Plant Systems- Protection

Mike Fitzner

Division of Animal Systems

Adele Turzillo

Division of Agricultural Systems

Brad Rein

Institute of Youth, Family and Communities

Muquarrab Qureshi

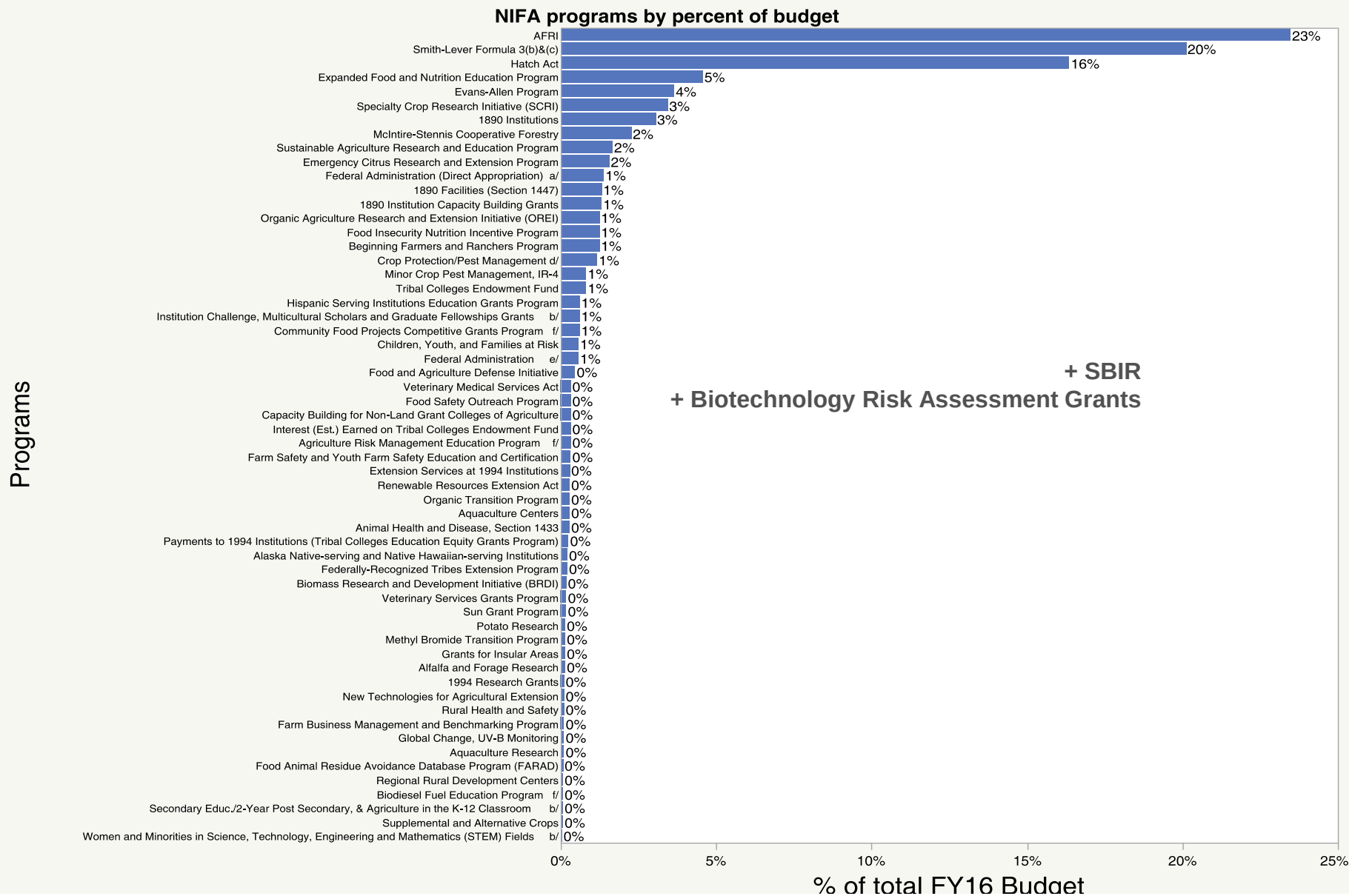
Institute of Bioenergy, Climate, and Environment

Louis Tupas

Institute of Food Safety and Human Nutrition

Denise Eblen

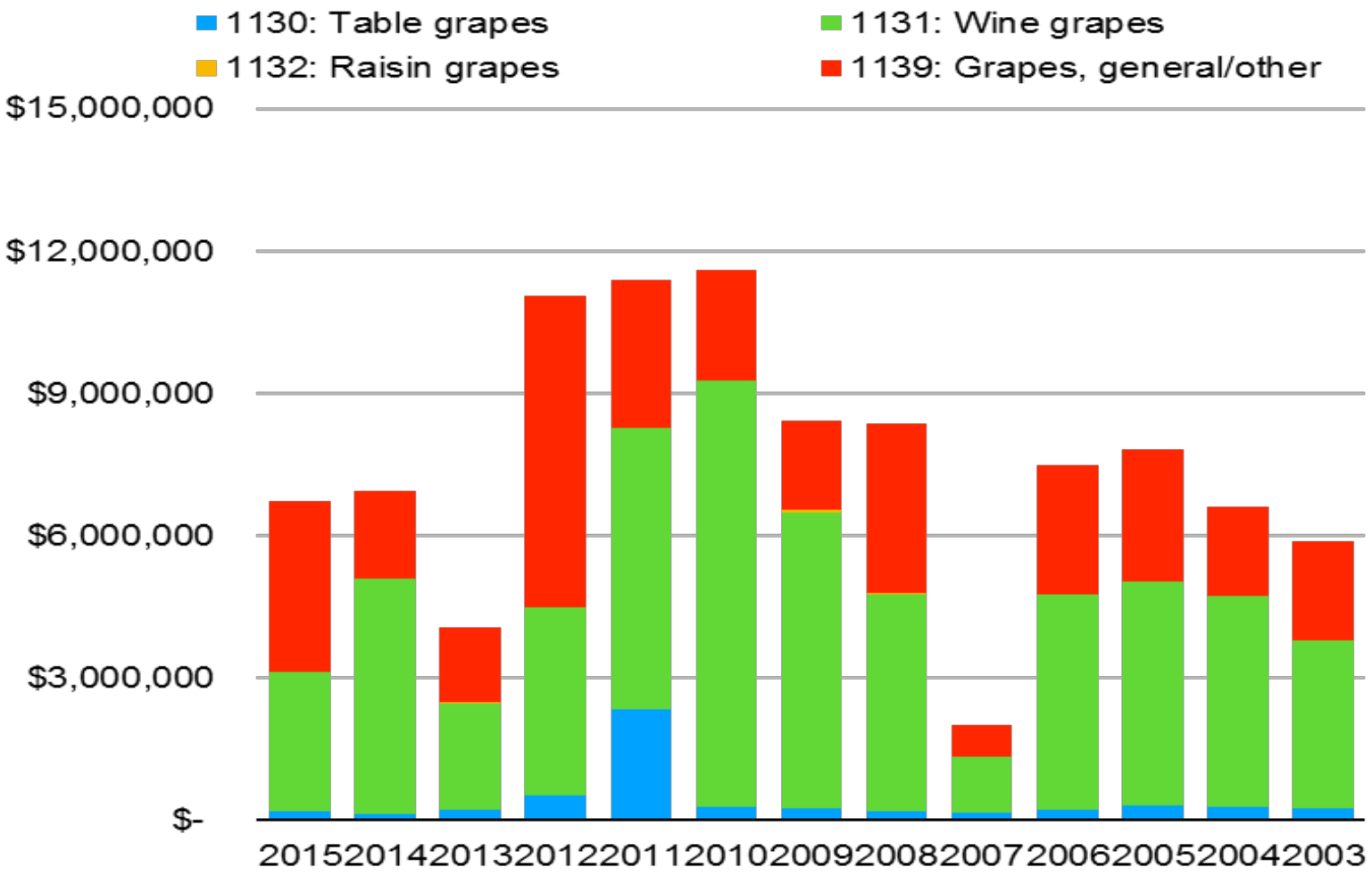
NIFA


NIFA programs by percent of budget
AFRI 23%
Smith-Lever Formula 3(b)&(c) 20%
Hatch Act 16%
Expanded Food and Nutrition Education Program 5%
Evans-Allen Program 4%
Specialty Crop Research Initiative (SCRI) 3%
1890 Institutions 3%
McIntire-Stennis Cooperative Forestry 2%
Sustainable Agriculture Research and Education Program 2%
Emergency Citrus Research and Extension Program 2%
Federal Administration (Direct Appropriation) a/ 1%
1890 Facilities (Section 1447) 1%
1890 Institution Capacity Building Grants 1%
Organic Agriculture Research and Extension Initiative (OREI) 1%
Food Insecurity Nutrition Incentive Program 1%
Beginning Farmers and Ranchers Program 1%
Crop Protection/Pest Management d/ 1%
Minor Crop Pest Management, IR-4 1%
Tribal Colleges Endowment Fund 1%
Hispanic Serving Institutions Education Grants Program 1%
Institution Challenge, Multicultural Scholars and Graduate Fellowships Grants b/ 1%
Community Food Projects Competitive Grants Program f/ 1%
Children, Youth, and Families at Risk 1%
Federal Administration e/ 1%
Food and Agriculture Defense Initiative 0%
Veterinary Medical Services Act 0%
Food Safety Outreach Program 0%
Capacity Building for Non-Land Grant Colleges of Agriculture 0%
Interest (Est.) Earned on Tribal Colleges Endowment Fund 0%
Agriculture Risk Management Education Program f/ 0%
Farm Safety and Youth Farm Safety Education and Certification 0%
Extension Services at 1994 Institutions 0%
Renewable Resources Extension Act 0%
Organic Transition Program 0%
Aquaculture Centers 0%
Animal Health and Disease, Section 1433 0%
Payments to 1994 Institutions (Tribal Colleges Education Equity Grants Program) 0%
Alaska Native-serving and Native Hawaiian-serving Institutions 0%
Federally-Recognized Tribes Extension Program 0%
Biomass Research and Development Initiative (BRDI) 0%
Veterinary Services Grants Program 0%
Sun Grant Program 0%
Potato Research 0%
Methyl Bromide Transition Program 0%
Grants for Insular Areas 0%
Alfalfa and Forage Research 0%
1994 Research Grants 0%
New Technologies for Agricultural Extension 0%
Rural Health and Safety 0%
Farm Business Management and Benchmarking Program 0%
Global Change, UV-B Monitoring 0%
Aquaculture Research 0%
Food Animal Residue Avoidance Database Program (FARAD) 0%
Regional Rural Development Centers 0%
Biodiesel Fuel Education Program f/ 0%
Secondary Educ./2-Year Post Secondary, & Agriculture in the K-12 Classroom b/ 0%
Supplemental and Alternative Crops 0%
Women and Minorities in Science, Technology, Engineering and Mathematics (STEM) Fields b/ 0%
+ SBIR
+ Biotechnology Risk Assessment Grants
Programs
0%
5%
10%
15%
20%
25%
% of total FY16 Budget

NIFA Programs

- **Capacity Programs**
  - For Research or Extension
  - Land Grant Universities (1862, 1890, 1994)
  - Funds divided based on formulas
  - Partnership model – Federal-state-local partnership
- **Competitive Programs**
  - Research, extension, education, or integrated
  - Land Grant Universities or
  - Examples:
    - AFRI (375 M): broad and foundational projects
    - SCRI (80 M): targeted systems projects
    - Alfalfa (2.25 M): highly targeted applied projects

NIFA Support for Grape Research



VitisGen™

efficient vineyard

NIFA

SCRI

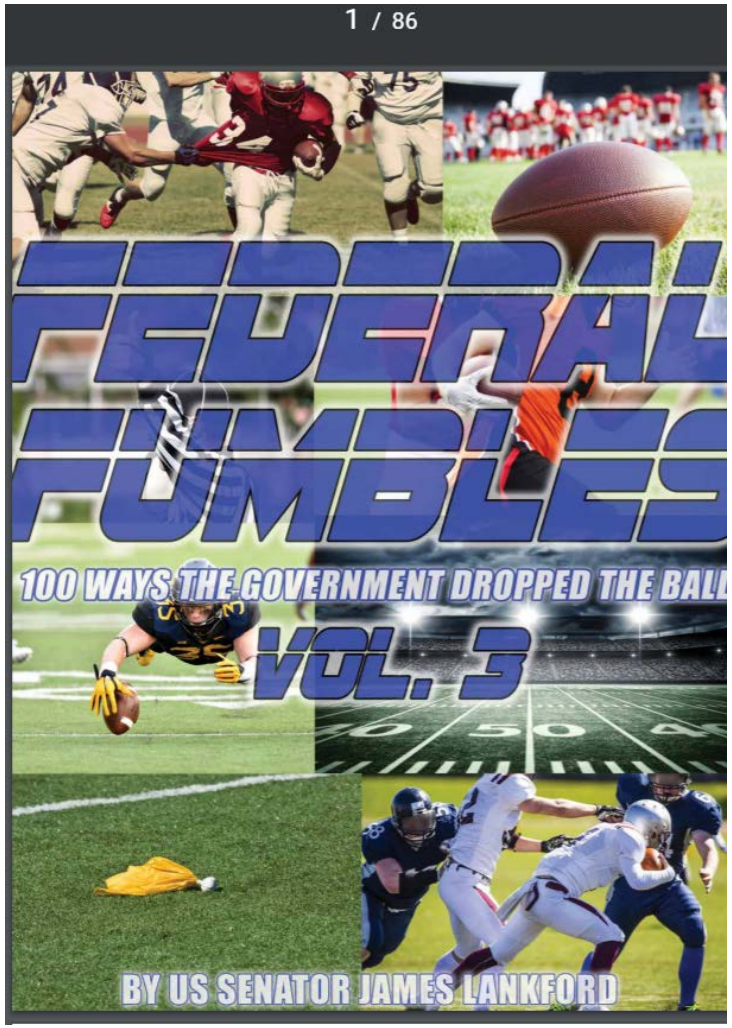
Specialty Crops Research Initiative

Specialty Crops Research Initiative

- **Specialty Crops**
  - 55M of mandatory funding
  - genomics to robotics to food safety
- **Citrus Disease Research Initiative**
  - 25M of mandatory funding
  - Solely targeted to citrus greening
- **Two stage review**
  - Relevancy review by agroindustry
  - Scientific merit review by peers

NIFA

SCRI and the next farm bill



Now That's a Party!

John Adams (not *that* John Adams) is a famous American composer and conductor.[143] His musical talent was apparent at a young age, and after earning multiple degrees at Harvard, he went on to be associated with the Chicago Symphony and the Cleveland Orchestra. He held the composer's chair at Carnegie Hall in New York and has had a lengthy relationship with the San Francisco Symphony Orchestra.[144] John Adams has won multiple Grammy Awards; his compositions rank among the best and most performed; and earlier this year you, the American taxpayer, paid for him to have an $85,000 birthday party in California.[145]

To celebrate his 70th birthday, the San Francisco Symphony was awarded $85,000 from the NEA for a project featuring several of Adams's recent works with musical guests that included the San Francisco Symphony Chorus.[146] The three-week project featured Adams himself conducting some of his works and according to the *San Francisco Chronicle*, were "only part of [a] yearlong spasm of celebration that will hear his music played across the globe."[147]

While it is certainly important for us to recognize the contributions of our artists and composers, a birthday celebration that cost the equivalent of the federal tax payments from you, your neighbors, and *their* neighbors is bit excessive.[148] The NEA must work to ensure grants are awarded to projects of national importance when no private funding is available. The San Francisco Symphony boasts more than 10,000 donors and 150 partner institutions and likely could have obtained private funding.[149] This massive birthday party could have been held without asking taxpayers to foot the bill.

If Everyone Is Special, No One Is Special

Each year, the USDA spends hundreds of millions of dollars to support the American agriculture industry. From helping people start a farm, to assisting farmers on marketing their products, to inspecting our food supply, the USDA contributes in many ways to the strength and security of our food sources. Unfortunately, Congress has sometimes led the USDA in the wrong direction, and it costs us millions.

One example is the Specialty Crop Research Initiative, which was created by Congress in 2014. The initiative provides federal research funds to find solutions to issues impacting production, processing, and sale of specialty crops.[150] That is great stuff until you look at the definition of *specialty crops*, which are defined as "fruits and vegetables, tree nuts, dried fruits, horticulture, and nursery crops (including floriculture)."[151] In other words, *specialty crops* covers anything that can be grown for food, medicine, or "aesthetic gratification."[152]

The USDA already provides agriculture and economic research assistance, a marketing service, and risk-management assistance and even operates a National Institute of Food and Agriculture to fund outside research on agriculture and agriculture-related needs.[153] So not only does the Specialty Crop Research Initiative have quite an expansive area of responsibility, it is also duplicative of many of the USDA's existing responsibilities.

In this case, it is Congress, not the USDA, that fumbled the ball by creating a separate initiative within the USDA that duplicates work done elsewhere in the agency and has redefined the word *specialty* to include everything grown in or on the ground, even if it is not grown for consumption. When our country is $20 trillion dollars in debt, Congress should reexamine requirements to remove congressionally mandated duplication and waste.

»SCRI

NIFA

AFRI

Agriculture and Food Research Initiative

AFRI is the largest competitive grant program at NIFA

- **$375 million in FY2017**
  - **Potentially $375 million in FY2018**
- **Programs in FY18**
  - **Foundational and Applied Science Program**
    - **Critical Agricultural Research and Extension Program (CARE)**
    - **Exploratory Program**
    - **Interagency programs**
  - **Education and Workforce Development**
  - **Sustainable Agricultural Systems CAPs**

Plant Health, Production and Products

Animal Health, Production and Products

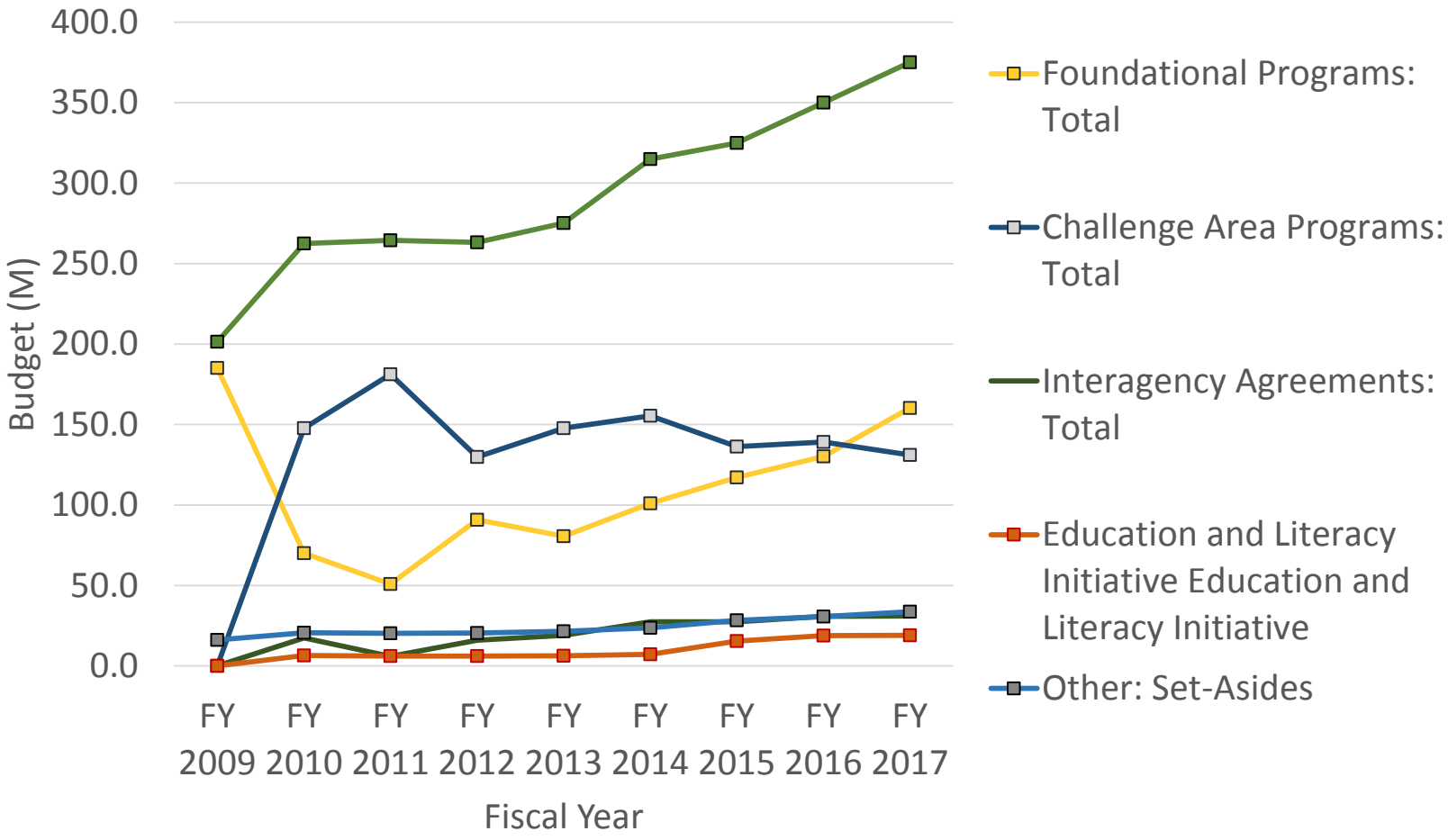
Food Safety Nutrition and Health

Bioenergy, Natural Resources and Environment

Agricultural Systems and Technology

Agricultural Economics and Rural Communities

AFRI Budget Over Years



Leveraging with Commodity Boards in 2016

- Topics 7
- Proposals 18
- Fundable Proposals 10
- Awards- 9 ($4 M)
- Co-funded awards – 5 ($1.3 M from 4 commodity boards)

AFRI- Interagency Activities

- Plant-Microbe Interactions (with NSF)
- Plant and microbiome EAGERs (with NSF)
- National Robotics Initiative (led by NSF)
- Cyberphysical Systems (led by NSF)
- INFEWS (with NSF)
- Ecology and Evolution of Infectious Diseases (with NSF, NIH, BBSRC)
- International Wheat Yield Partnership (BBSRC, USAID, and others)
- Water for Agriculture (with BARD)
- Plant and animal health and production (with Irish agencies)
- Dual Purpose Research (with NIH)
- Biomarkers for nutrition (with NIH)
- Bioenergy Crop Genomics (with DOE)

National Robotics Initiative

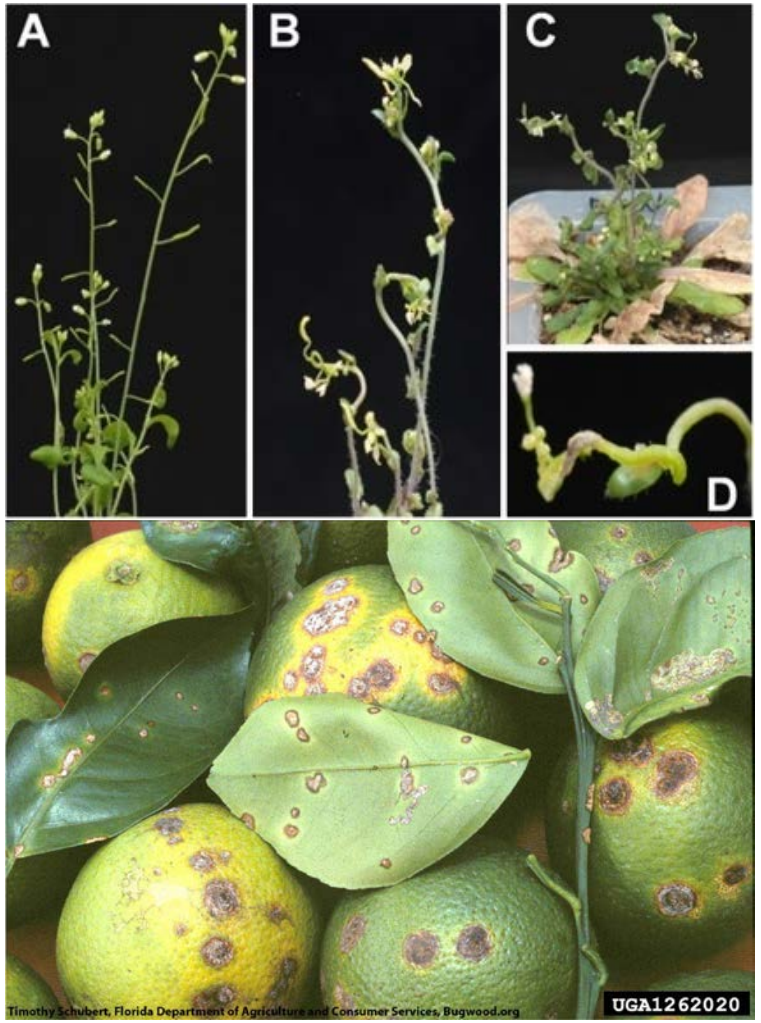
- **2013-2021:**
  - **Funded 17 projects for a total of 14 Million**
  - **Committed for additional 22 Million over the next four years**
- **Many projects with basic biology interests**
  - **Robot-assisted Field-based High Throughput Plant Phenotyping**
  - **Saliency-driven Robotic Network for Spatio-temporal Plant Phenotyping**
  - **Co-Aerial-Ecologist: Robotic Water Sampling and Sensing in the Wild**

Cyberphysical Systems

- **2017-2021:**
  - **Funded 4 projects for a total of 3.5 Million**
  - **Committed for additional 22 Million over the next four years**
- **Potential for projects with basic biology interests**
  - **Adaptive Water Quality Sampling with Autonomous Vehicles**
  - **Develop Canopy Sensing and Computational Systems for Real-Time Control and Feedback**
  - **Integration of Social Behavioral Modeling for Smart Environments**
  - **A multi-scale data assimilation framework for layered sensing and hierarchical control of disease spread**

Plant Biotic Interactions

- Bridging basic and use-inspired science gap
  - Overlap or gaps avoided
  - Artificial division of projects not necessary
- In 2016
  - NIFA funded 10 projects for $7.3 million
  - NSF funded 11 projects for $7.4 million
- Committed to joint activity in FY2017-18



What's next?
Framing the Directions for the Future

FACT Initiative of NIFA

Focus on Open Data FAIR principles:
Findable, Accessible, Interoperable, and Re-usable

- **Community Building**
  - Standards, Ontology, and Common data resources
- **Small data to Big data in public domain**
  - Value, Incentives, Digitization, Policies
- **Infrastructure**
- **Training and Education**

2016	2017	2018	2019-
» Stakeholder Input – Ideas Engine – Data Summit	• Refining Priorities • Domain Workshops • Catalytic Projects	• AFRI Priority Areas • FACT REEUs • Innovation through SBIR	

Data Deluge allows Systems Research

DNA/RNA

High throughput phenotyping

Climate

Sensory

Precision agriculture

Nutritional

Consumer

Economic

Educational

Analyzing Systems

Providing Solutions

Producers

Processors

Consumers

Researchers

Agricultural Systems

Dimensions	Domain
Quantity	Health
Quality	Environmental
Distribution	Economic
Resilience	Social
	Biological (genetic)
	Physical (technological)
	Management

Based on: Institute of Medicine and National Research Council. 2015. A Framework for Assessing Effects of the Food System. Washington, DC: The National Academies Press. doi:https://doi.org/10.17226/18846.

Data to Fine-Tune Vineyard Operations

NIFA

efficient vineyard

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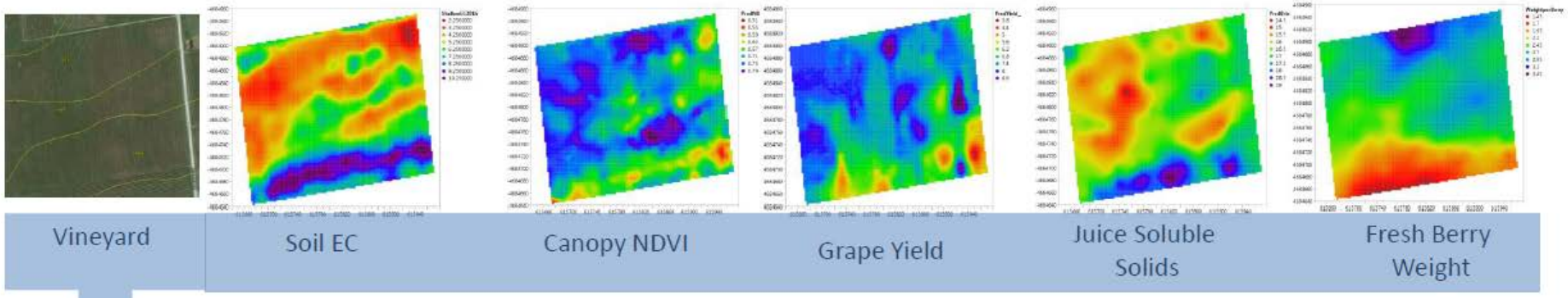
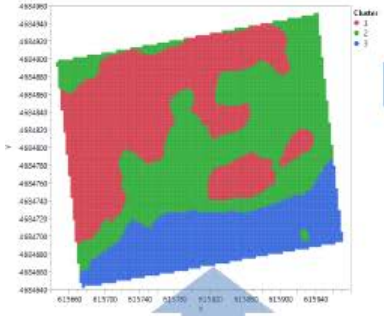
1. Spatial Soil, Canopy, and Crop Sensor Measurement, Processing, and Mapping



2. Spatial Vineyard Management Map



3. Grower Input Support System

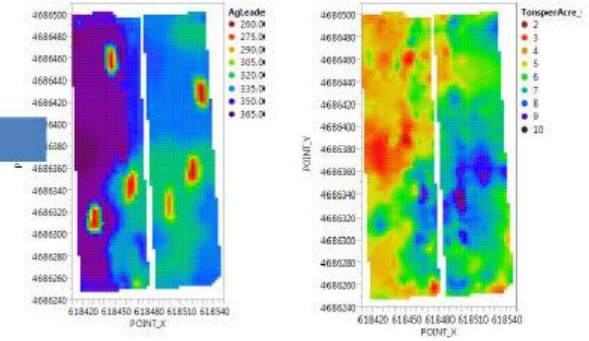
4. Interface with new and existing Precision Agriculture technology

5. On-the-fly Vineyard Mechanization control

Shoot Thinning

Fruit Thinning

6. Viticulture and Economic Evaluation



7. Stakeholder Outreach and Extension

www.efficientvineyard.com

efficient vineyard

- » 4TB Per 12 Hours per tractor
- » Covers 80 acres

Systems Research Funding in 2018

- **Specialty Crops Research Initiative**
  - **55M total**
  - **Up to 7M per project**
- **Organic Research and Extension Initiative**
  - **17 M total**
  - **Up to 5 M total**
- **Sustainable Agricultural Systems in AFRI**
  - **Replaces former challenge areas**
  - **60 M in FY2018 for 6 grants**

NIFA

Funding Opportunities for Grape Research

AFRI Sustainable Agricultural Systems
SCRI
OREI

raisins

AFRI Plant Health and Production and Plant Products

Genomes to Phenomes

Production

Harvest

Processing

Table grapes

AFRI Food Safety, and Human nutrition

IR4- Minor Crop Pest Management Program

Small Business Innovation Research Grants

SARE

IPM Programs

wines

AFRI Agricultural Systems and Technology
AFRI Ag. Economics and Rural Communities

Creating and protecting a sustainable value chain


Thank you